# DISARMAMENT

A periodic review by the United Nations

Volume XV, Number 2 1992

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# High-Level Meeting of the Security Council: Note by the President of the Security Council on Behalf of the Members*

United Nations, New York, 31 January 1992

At the conclusion of the 3046th meeting of the Security Council,[1] held at the level of Heads of State and Government on 31 January 1992 in connection with the item entitled "The responsibility of the Security Council in the maintenance of international peace and security", the President of the Security Council issued the following statement on behalf of the members of the Council.

"The members of the Security Council have authorized me to make the following statement on their behalf.

"The Security Council met at the Headquarters of the United Nations in New York on 31 January 1992, for the first time at the level of Heads of State and Government. The members of the Council considered, within the framework of their commitment to the United Nations Charter, 'The responsibility of the Security Council in the maintenance of international peace and security'.[1]

"The members of the Security Council consider that their meeting is a timely recognition of the fact that there are new favourable international circumstances under which the Security Council has begun to fulfil

* S/23500.

more effectively its primary responsibility for the maintenance of international peace and security.

"*A time of change*

"This meeting takes place at a time of momentous change. The ending of the Cold War has raised hopes for a safer, more equitable and more humane world. Rapid progress has been made, in many regions of the world, towards democracy and responsive forms of government, as well as towards achieving the Purposes set out in the Charter. The completion of the dismantling of apartheid in South Africa would constitute a major contribution to these Purposes and positive trends, including to the encouragement of respect for human rights and fundamental freedoms.

"Last year, under the authority of the United Nations, the international community succeeded in enabling Kuwait to regain its sovereignty and territorial integrity, which it had lost as a result of Iraqi aggression. The resolutions adopted by the Security Council remain essential to the restoration of peace and stability in the region and must be fully implemented. At the same time the members of the Council are concerned by the humanitarian situation of the innocent civilian population of Iraq.

"The members of the Council support the Middle East peace process, facilitated by the Russian Federation and the United States, and hope that it will be brought to a successful conclusion on the basis of Council resolutions 242 (1967) and 338 (1973).

"They welcome the role the United Nations has been able to play under the Charter in progress towards settling long-standing regional disputes, and will work for further progress towards their resolution. They applaud the valuable contribution being made by United

Nations peace-keeping forces now operating in Asia, Africa, Latin America and Europe.

"The members of the Council note that United Nations peace-keeping tasks have increased and broadened considerably in recent years. Election monitoring, human rights verification and the repatriation of refugees have in the settlement of some regional conflicts, at the request or with the agreement of the parties concerned, been integral parts of the Security Council's effort to maintain international peace and security. They welcome these developments.

"The members of the Council also recognize that change, however welcome, has brought new risks for stability and security. Some of the most acute problems result from changes to State structures. The members of the Council will encourage all efforts to help achieve peace, stability and cooperation during these changes.

"The international community therefore faces new challenges in the search for peace. All Member States expect the United Nations to play a central role at this crucial stage. The members of the Council stress the importance of strengthening and improving the United Nations to increase its effectiveness. They are determined to assume fully their responsibilities within the United Nations Organization in the framework of the Charter.

"The absence of war and military conflicts amongst States does not in itself ensure international peace and security. The non-military sources of instability in the economic, social, humanitarian and ecological fields have become threats to peace and security. The United Nations membership as a whole, working through the appropriate bodies, needs to give the highest priority to the solution of these matters.

"*Commitment to collective security*

"The members of the Council pledge their commitment to international law and to the United Nations Charter. All disputes between States should be peacefully resolved in accordance with the provisions of the Charter.

"The members of the Council reaffirm their commitment to the collective security system of the Charter to deal with threats to peace and to reverse acts of aggression.

"The members of the Council express their deep concern over acts of international terrorism and emphasize the need for the international community to deal effectively with all such acts.

"*Peacemaking and peace-keeping*

"To strengthen the effectiveness of these commitments, and in order that the Security Council should have the means to discharge its primary responsibility under the Charter for the maintenance of international peace and security, the members of the Council have decided on the following approach.

"They invite the Secretary-General to prepare, for circulation to the Members of the United Nations by 1 July 1992, his analysis and recommendations on ways of strengthening and making more efficient within the framework and provisions of the Charter the capacity of the United Nations for preventive diplomacy, for peacemaking and for peace-keeping.

"The Secretary-General's analysis and recommendations could cover the role of the United Nations in identifying potential crises and areas of instability as well as the contribution to be made by regional organizations in accordance with Chapter VIII of the United Nations Charter in helping the work of the Council.

They could also cover the need for adequate resources, both material and financial. The Secretary-General might draw on lessons learned in recent United Nations peace-keeping missions to recommend ways of making more effective Secretariat planning and operations. He could also consider how greater use might be made of his good offices, and of his other functions under the United Nations Charter.

"*Disarmament, arms control and weapons of mass destruction*

"The members of the Council, while fully conscious of the responsibilities of other organs of the United Nations in the fields of disarmament, arms control and non-proliferation, reaffirm the crucial contribution which progress in these areas can make to the maintenance of international peace and security. They express their commitment to take concrete steps to enhance the effectiveness of the United Nations in these areas.

"The members of the Council underline the need for all Member States to fulfil their obligations in relation to arms control and disarmament; to prevent the proliferation in all its aspects of all weapons of mass destruction; to avoid excessive and destabilizing accumulations and transfers of arms; and to resolve peacefully in accordance with the Charter any problems concerning these matters threatening or disrupting the maintenance of regional and global stability. They emphasize the importance of the early ratification and implementation by the States concerned of all international and regional arms control arrangements, especially the START and CFE Treaties.

"The proliferation of all weapons of mass destruction constitutes a threat to international peace and

security. The members of the Council commit themselves to working to prevent the spread of technology related to the research for or production of such weapons and to take appropriate action to that end.

"On nuclear proliferation, they note the importance of the decision of many countries to adhere to the Non-Proliferation Treaty and emphasize the integral role in the implementation of that Treaty of fully effective IAEA safeguards, as well as the importance of effective export controls. The members of the Council will take appropriate measures in the case of any violations notified to them by the IAEA.

"On chemical weapons, they support the efforts of the Geneva Conference with a view to reaching agreement on the conclusion, by the end of 1992, of a universal convention, including a verification regime, to prohibit chemical weapons.

"On conventional armaments, they note the General Assembly's vote in favour of a United Nations register of arms transfers as a first step, and in this connection recognize the importance of all States providing all the information called for in the General Assembly's resolution.

* * *

"In conclusion, the members of the Security Council affirm their determination to build on the initiative of their meeting in order to secure positive advances in promoting international peace and security. They agree that the United Nations Secretary-General has a crucial role to play. The members of the Council express their deep appreciation to the outgoing Secretary-General, His Excellency Mr. Javier Pérez de Cuéllar, for his outstanding contribution to the work of the United Nations, culminating in the signature of the

El Salvador peace agreement. They welcome the new Secretary-General, His Excellency Dr. Boutros Boutros-Ghali, and note with satisfaction his intention to strengthen and improve the functioning of the United Nations. They pledge their full support to him, and undertake to work closely with him and his staff in fulfilment of their shared objectives, including a more efficient and effective United Nations system.

"The members of the Council agree that the world now has the best chance of achieving international peace and security since the foundation of the United Nations. They undertake to work in close cooperation with other United Nations Member States in their own efforts to achieve this, as well as to address urgently all the other problems, in particular those of economic and social development, requiring the collective response of the international community. They recognize that peace and prosperity are indivisible and that lasting peace and stability require effective international cooperation for the eradication of poverty and the promotion of a better life for all in larger freedom."

**Note**

1 The meeting was chaired by the Prime Minister of the United Kingdom of Great Britain and Northern Ireland as the President of the Security Council for January. Statements were made by His Excellency Dr. Franz Vranitzky, Federal Chancellor of Austria, His Excellency Mr. Wilfried Martens, Prime Minister of Belgium, His Excellency Dr. Carlos Alberto Wahnon de Carvalho Veiga, Prime Minister of Cape Verde, His Excellency Mr. Li Peng, Premier of the State Council of China, His Excellency Dr. Rodrigo Borja-Cevallos, Constitutional President of Ecuador, His Excellency Mr. François Mitterrand, President of France, His Excellency Dr. Géza Jeszenszky, Minister for Foreign Affairs and Personal Emissary of the Prime Minister of Hungary, His Excellency Mr. P. V. Narasimha Rao, Prime Minister of India, His Excellency Mr. Kiichi Miyazawa, Prime Minister of Japan, His Majesty Hassan II, King of Morocco, His Excellency Mr. Boris N. Yeltsin, President of the Russian

Federation, His Excellency the Rt. Hon. John Major MP, Prime Minister of the United Kingdom of Great Britain and Northern Ireland, His Excellency Mr. George Bush, President of the United States of America, His Excellency Dr. Carlos Andrés Pérez, President of Venezuela, and His Excellency Dr. Nathan Shamuyarira, Minister of Foreign Affairs and Personal Emissary of the President of Zimbabwe, as well as by the Secretary-General, His Excellency Dr. Boutros Boutros-Ghali.

# Start and Beyond*

## START: An End and a Beginning

Linton F. Brooks

### Introduction

On 31 July 1991, President George Bush of the United States and President Mikhail Gorbachev of the Soviet Union signed the most significant arms control agreement on strategic offensive weapons ever negotiated by the two countries. The Treaty between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (commonly known as the START Treaty) represents a milestone in over two decades of negotiations and is a symbol of the dramatic change in the relationship between the two countries.

The START Treaty governs each side's intercontinental ballistic missiles (ICBMs), submarine-launched ballistic

*The following articles, written by Linton F. Brooks and Yuri Nazarkin during the transformation of the USSR, discuss, from the viewpoints of the United States and the Soviet Union, the many considerations involved in the negotiations leading to the signing of the START Treaty.

In the Alma Ata Declaration of 21 December 1991, the 11 States participating in the Commonwealth of Independent States "guarantee in accordance with their constitutional procedures the discharge of the international obligations deriving from treaties and agreements concluded by the former Union of Soviet Socialist Republics".

References to the USSR are to the State as it existed before its transformation into the Commonwealth of Independent States. Since the Treaty was signed, both parties have undertaken unilateral cuts in their nuclear arsenals which exceed those proposed by the Treaty

Ambassador Linton F. Brooks is the United States chief START negotiator.

missiles (SLBMs), and heavy bombers. For over 40 years, these strategic forces have been a mainstay of the United States approach to security through deterrence. Because of the continued need to rely on these weapons to ensure stability throughout the cold war, the negotiations were prolonged and, at times, difficult, with each side seeking to be certain that there were no unilateral advantages for the other side. The resulting START Treaty is detailed and complex, totalling over 800 manuscript pages.

In one sense, the fundamental United States aims in START were no different from those that guided negotiations of the SALT-I and SALT-II agreements in the early 1970s: ensuring stability and reducing the risk of nuclear war. Unlike the SALT agreements, however, the START Treaty succeeded in fulfilling our primary objectives. The START Treaty represents a new era in negotiations that breaks tradition with the past in at least three ways:

—START involves actual and significant reductions in the strategic forces of each side.

—By including direct and equal limits on ballistic missile throw-weight (a measure of the lift capability of ballistic missiles) and on ballistic missile warheads, the Treaty ensures equal rights between the two sides, the basis of more meaningful measures of strategic capability.

—The verification provisions, which are perhaps the most significant aspects of the Treaty, are the most extensive and intrusive ever negotiated, going far beyond what was possible in earlier strategic arms negotiations. As a result, the START Treaty promotes openness and military transparency to an extent that heretofore was not feasible.

The START Treaty represents a turning-point in the very nature of strategic arms control. The successful results of our work, as characterized by the verification provisions, will make the START Treaty the foundation for future arms control initiatives. There will almost certainly never be another

protracted negotiation such as that which led to this massive Treaty. The provisions of the START Treaty were designed to be relevant, not just for the next few years, but well beyond the 15-year duration of the Treaty, if the parties agree to extend it, and the extensive verification measures are strong enough to endure. If minor modifications are required, the Treaty establishes a forum—the Joint Compliance and Inspection Commission—for making those modifications and for discussing issues of Treaty implementation, whether such issues arise tomorrow, next week, or in years to come.

In addition to being a major accomplishment in its own right, the START Treaty provides a foundation for continuing United States initiatives to enhance international security and stability and reduce the risk of war, especially nuclear war. These future initiatives may take many forms—including unilateral initiatives that may not involve formal negotiations at all. An example of such flexibility is the series of measures proposed by President Bush in September 1991. The prompt and positive reaction by President Gorbachev is an indication of the new relationship between the United States and the former Soviet Union as we move beyond confrontation to cooperation.

## Background

The goal of enhancing stability and reducing the risk of war through meaningful reductions in strategic offensive arms—a goal long sought by the United States—has its roots in the very beginning of the atomic age. For many years, this goal was elusive. As the number and potency of such weapons continued to increase, strategic weapons came to epitomize a bipolar relationship based on confrontation and mistrust. Attempts to limit such arms managed only to slow their increase temporarily.

On 29 June 1982, the United States and the Soviet Union began the Strategic Arms Reduction Talks in Geneva.

The goal of the United States was to achieve deep reductions in the most destabilizing systems of strategic offensive arms. The United States sought a verifiable agreement that would enhance stability and reduce the risk of war. With various interruptions, the Talks continued for the next nine years, supplemented by several ministerial meetings at Geneva, Washington, Houston and Moscow, and summit meetings in Geneva in 1985, Reykjavik in 1986, Washington in 1987, Moscow in 1988, Malta in 1989, and Washington in 1990. On 31 July 1991, the Treaty was signed at the Moscow summit.

## The START Treaty

The START Treaty is comprised of the Treaty itself, two annexes, six protocols, and a memorandum of understanding covering data on the two nations' strategic forces. In addition, there are several associated documents which, although they are not integral parts of the Treaty in the legal sense, are integral to the overall negotiated regime. Together, these historic documents contain the rules by which the strategic offensive forces of both countries will be reduced and limited and by which these actions will be verified. The START Treaty achieves equal overall ceilings on the strategic nuclear forces that can be deployed by either side through a series of interrelated limits and sublimits. Each side is limited to no more than:

—1,600 strategic nuclear delivery vehicles (deployed ICBMs, SLBMs and heavy bombers), a limit that is 36 per cent below the current Soviet level and 29 per cent below the current United States level;

—6,000 total accountable warheads, 41 per cent below the current Soviet level and 43 per cent below the current United States level;

—4,900 accountable warheads deployed on ICBMs or SLBMs, 48 per cent below the current Soviet level and 40 per cent below the current United States level;

—1,540 accountable warheads deployed on 154 heavy ICBMs, a 50 per cent reduction in current Soviet forces (the United States has no heavy ICBMs);

—1,100 accountable warheads deployed on mobile ICBMs; and

—An aggregate throw-weight of deployed ICBMs and SLBMs equal to 3,600 million metric tons, about 54 per cent of the current Soviet aggregate throw-weight. (Because current United States aggregate ICBM and SLBM throw-weight falls below this level, no United States throw-weight reductions are required.)

In addition, there are a number of subsidiary limits, covering such areas as the numbers of test and training heavy bombers, the number of space-launch facilities using converted ICBMs and SLBMs, the number of spare missiles and launchers for mobile ICBMs, the number of storage facilities, and the quantity of ICBM loading equipment. These secondary limits are designed to close off possible circumvention routes while allowing flexibility in implementation.

Unlike the limits set in earlier strategic nuclear arms agreements, these limits will result in real reductions, including reductions in the near term. The provisions are such that, by the end of the first three years of the seven-year reduction period called for in the Treaty, the two sides will be limited to equal levels of deployed strategic forces. Reaching these levels will require the removal of nuclear weapons from the deployed forces of both sides, beginning as soon as the Treaty enters into force. Overall, the deepest percentage reductions will be in the Soviet Union's SS-18 heavy ICBMs.

The central limits set in the Treaty are designed to strengthen strategic stability by encouraging the restructuring of the Soviet strategic arsenal away from its historic emphasis on first-strike weapons, such as the SS-18, and towards less threatening, more survivable systems, such as heavy bombers. It is important to note that the START Treaty places no

restrictions on conventional capabilities, nor on the development of stabilizing defences: thus, it encourages a lessening of reliance on nuclear weapons.

In the early years of strategic arms control negotiations, the sides were prepared to rely only on so-called national technical means (NTM) of verification.[1] As the focus of control shifted over the years from large, fixed units, such as ICBM silos, to restrictions on items such as mobile ICBMs, numbers of warheads on ballistic missiles and production of mobile ICBMs, it became necessary to augment monitoring assets by using such techniques as data exchanges and on-site inspections. Initially, many were sceptical of the notion of foreign inspectors getting too close to weapons systems and installations containing highly sensitive technology, but over the years it became apparent that effective arms control required not only the continued use of NTM but also the use of other kinds of "intrusive" verification measures.

Consequently, the reductions and limitations of the START Treaty will be conducted under the terms of highly intrusive verification procedures. The Treaty builds on the three years of experience derived from the Treaty Between the United States of America and the Soviet Union on the Elimination of Their Intermediate-Range and Shorter-Range Missiles (the INF Treaty), with inspections by each side of virtually every significant strategic installation of the other side. All told, the START Treaty includes 12 different types of inspections plus continuous monitoring in each country at the facilities that produce mobile ICBMs or their first stages.[2]

The Treaty also creates an extensive system of over 80 separate notifications—each side being required to tell the other about new systems as well as about movements, operations and eliminations of the existing forces subject to the Treaty—to increase the understanding each side has of the other's intentions and actions.

## START in Today's Changing World

The START Treaty is clearly one of the significant milestones in the relationship between the United States and the Soviet Union, even in relation to the sweeping changes that the world has witnessed inside the Soviet Union. Still, critics ask whether the START Treaty continues to be relevant. Such critics sometimes claim either that there is no need for any formal agreement, or that START should be set aside in favour of more sweeping reductions. The same question will also be asked of future efforts to reduce and regulate strategic offensive arms.

In answering such criticisms, it is important first to note that the START Treaty is not about eliminating deterrence; it is about reducing the risk of war. Therefore, any criticism of the sufficiency of the reductions under START ignores the realities of cost, environment and stability that weigh heavily in the implementation of any treaty.

Secondly, the START Treaty still has great value, after the attempted coup within the Soviet Union. The military transparency and structured approach to reductions of strategic offensive arms increase the stability that is needed during this period in which the different republics are charting their future and defining their relationship, if any, with the Union.

Thus far, each of the "nuclear" republics of the former Soviet Union has, at least verbally, endorsed the outcome of the Treaty, but it is obvious that each wants to be more involved in the control and final disposition of the nuclear arms and facilities within its borders. With the START Treaty, we will be able to enhance stability and reduce mistrust, as the relationships of the republics and the Union develop. Therefore, near-term implementation of the START Treaty will make it one of the pillars of our overall continued strategic relationship with the former Soviet Union.

## Initiatives after START

Until recently, discussion of the steps that the super-Powers might take following the entry into force of START focused almost exclusively on formal, follow-on negotiations. The changed relationship between the United States and the Soviet Union, along with the strong and stable foundation provided by START, allows us to explore new approaches to enhancing stability. Protracted, formal negotiations may no longer be the only—or even the best—approach. In their place, we may see unilateral initiatives that spark reciprocal measures by the other side. This approach discards the traditional arms control process in the light of the changed world situation.

The best example of this new approach to stability is the sweeping set of nuclear initiatives proposed by President Bush on 27 September 1991. In announcing a number of initiatives affecting the entire spectrum of United States nuclear weapons, the President proposed to take advantage of recent dramatic changes within the Soviet Union that allow the United States to take steps that enhance stability and dramatically reduce the size and nature of United States' nuclear deployments worldwide.

In addition to initiatives on ground-launched theatre nuclear weapons and sea-based tactical nuclear weapons, the President took a number of initiatives on strategic nuclear forces, all designed to build upon START. Seeking to "use START as a springboard to achieve additional stabilizing changes", President Bush:

—Directed that all United States strategic bombers be removed from day-to-day alert;

—Called upon the Soviet Union to confine its mobile missiles to their garrisons, where they would be safer and more secure;

—Announced that all United States ICBMs scheduled for deactivation under START would stand down from alert at

once and that elimination of these systems would be accelerated once START was ratified;

—Called upon the Soviet Union to accelerate its reduction schedule under START as well;

—Terminated development of the Peacekeeper ICBM Rail Garrison system and the mobile elements of the small ICBM programme. As a result, the small single-warhead ICBM will be the sole remaining United States ICBM modernization programme;*

—Called upon the Soviet Union to match United States restraint by terminating any and all programmes for future ICBMs with more than one warhead, and limit Soviet ICBM modernization efforts to only one type of single-warhead missile;

—Cancelled development of the nuclear short-range attack missile for heavy bombers;

—Created a new United States Strategic Command, designed to improve command and control of all United States strategic forces;

—Proposed that the United States and the Soviet Union seek early agreement to eliminate from their inventories all ICBMs with multiple warheads;

—Called upon the Soviet leadership to join the United States in taking concrete steps to permit the deployment of non-nuclear defences that would protect against limited ballistic missile strikes, whatever their source.

These proposals, and the prompt, favourable response by Soviet President Gorbachev, point the way to a new era in the search for international security and stability. Discussion on the details, as necessary, will be more streamlined and rapid, with the possibility of results being achieved in weeks

*Editor's note: On 28 January 1992, in his State of the Union Message, President Bush announced that the United States would cancel the small ICBM programme. (See "Documentation Relating to Disarmament".)

or months, not years. The foundation of this new era, however, remains the START Treaty.

## Summary

We are living in one of the most dynamic, interesting and significant periods in the history of civilization. All nations can take heart in the fact that, regardless of the recent changes in many aspects of United States-Soviet relationships, both sides continue to endorse the general principles associated with maintaining a national security at lower levels and with more stable nuclear forces. There is no indication that such a trend will change in the near term. It is clearly possible, however, that the traditional arms control *modus operandi* will need to give way, at least to some degree, to a more dynamic approach to arms control.

The START Treaty, the subsequent proposals by President Bush, and the prompt response to those proposals by President Gorbachev all demonstrate the extraordinary results that can be achieved when the leaders of both countries work together for a common goal. Negotiating limitations on strategic nuclear weapons has never been an easy task, nor is it ever likely to be. Yet, recent developments show that great progress can be made. We can remain hopeful that further means towards a safer, more stable world are now within our grasp.

### Notes

1 "National technical means", a term used in a variety of arms control treaties, refers to systems designed to collect information useful in monitoring treaty compliance. Examples include reconnaissance satellites, ships and aircraft that are used to monitor missile tests, and ground stations, such as the United States radar on Shemya Island in Alaska.

2 It should be noted that, for purposes of reciprocity, the United States has agreed to count the Peacekeeper ICBM as a mobile missile under this Treaty, regardless of how it is actually deployed.

# Strategic Nuclear Disarmament in a New Era

Yuri Nazarkin

## I

With the emergence in 1945 of nuclear—or, as they were then called, atomic—weapons, there came also the question of nuclear disarmament. Actual negotiations on the issue did not begin in earnest until the 1960s, when military and strategic parity had been established between the then Soviet Union and the United States. It was the Caribbean crisis of October 1962 that acted as shock therapy: those involved in the crisis, and indeed humanity at large, looked into the nuclear abyss, shied away and began looking for ways to avoid it.

In August 1963 the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water—the so-called partial test-ban Treaty—was signed in Moscow by the United States and the Soviet Union, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on 1 July 1968. Negotiations on comprehensive constraints on both the delivery vehicles for strategic offensive nuclear arms and anti-ballistic missile (ABM) defences were also undertaken. Strategic arms limitation talks—later known as SALT-I—finally began on 16 November 1969. In 1972 the ABM Treaty and the Interim Agreement on certain measures regarding the limitation of strategic offensive arms were signed. That Interim

Ambassador Yuri Nazarkin was head of the Soviet delegation to the START talks from November 1988 and is currently with the Russian Foreign Ministry.

Agreement was to be superseded by the SALT-II Treaty, which was signed in 1979 but never ratified. The *détente* of the 1960s and 1970s was being replaced by growing confrontation, and dark clouds were gathering on the international horizon.

None the less, Soviet-United States talks on limiting nuclear arms in Europe and on limiting and reducing strategic arms began in the 1980s. Late in 1983 both were suspended without having achieved any positive results. That outcome was inevitable, given the Soviet-United States relations of the day and the unwillingness of either side to take the first step towards overcoming the confrontational inertia.

Common sense was, however, slowly but surely beginning to prevail. Even though the war in Afghanistan was still going on, the barometer of the international climate shifted in the direction of "clear". On 12 March 1985 the Soviet-United States Nuclear and Space Talks began. The process known as perestroika got under way in the USSR, and in foreign policy new approaches, to be known as "new political thinking", were adopted.

A statement by Mikhail S. Gorbachev dated 15 January 1986 heralded that new thinking. Despite certain quite specific and very important steps mentioned in the statement (such as the extension of the moratorium on all nuclear testing), the West largely treated his proposals as a publicity stunt. The West did not perceive a nuclear-free world by the year 2000 to be a realistic goal. Some elements in his programme, however, were later implemented.

What was needed to make headway in talks on the limitation of strategic offensive arms were more specific steps that could help overcome the inertia of mistrust and confrontation. The summit meeting held at Reykjavik on 11 and 12 October 1986 had a major role to play in this regard.

From a formal viewpoint the meeting did not lead to any result: the two sides did not draft any joint documents to

codify agreements because the United States side failed to accept the Soviet proposal on non-withdrawal from the ABM Treaty during the 10-year period. The euphoria surrounding the Strategic Defense Initiative (SDI) persisted, and the ABM Treaty was blocking the implementation of that programme.

At the same time the Reykjavik meeting showed that it was realistic to work towards agreements on intermediate-range missiles and strategic offensive arms alike. Discussions on these issues were very detailed and substantive and they demonstrated great flexibility on the Soviet side. It was in Reykjavik that the Soviet side agreed to the procedure—proposed by the United States—of attributing to heavy bombers (HB) all nuclear weapons that were not long-range nuclear air-launched cruise missiles (ALCMs): all such weapons, regardless of their actual numbers, were to be attributed to each heavy bomber equipped for such weapons as 1 warhead (counting rules for long-range nuclear ALCMs were to be agreed upon at a later date). Certainly this put the United States in a highly advantageous position in terms of actual numbers of warheads, because it enjoyed vast superiority in strategic aviation. True, these advantages were to a certain extent compensated because the Soviet position on the range criterion for ALCMs was adopted: missiles with a range in excess of 600 kilometres were defined as long-range missiles (under the initial United States position the criterion was 1,500 kilometres). As a result, heavy bombers with shorter-range ALCMs would be launching them within reach of Soviet air defences.

Nevertheless, the Soviet agreement to the United States counting rules constituted a substantial concession. Was it justified? An answer to this question should take into account the following aspects. A major and quite concrete step was required on the part of the Soviet Union at that time to demonstrate the seriousness of its intentions and to help overcome the inertia of distrust on the other side. Finally, a

treaty was signed, undoubtedly in the interests of both sides and balancing their mutual concessions. It is in this perspective that they should be viewed—in their totality rather than in regard to individual elements.

## II

It was the asymmetry of strategic offensive arms that occasioned the greatest difficulties in the talks: the United States has more heavy bombers and re-entry vehicles (RVs) for submarine-launched ballistic missiles (SLBMs), while the Soviet Union has more intercontinental ballistic missiles (ICBMs), particularly many more with RVs on them; it also has mobile and heavy ICBMs while the United States has no such systems. Finding a common denominator for these asymmetries and accounting for them in the interest of achieving a balance underlies the final compromise that constitutes the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START).

It is the ceilings and subceilings that serve as such denominators. Under the START Treaty, after seven years of its operation each side may have no more than:

—1,600 deployed ICBMs and their associated launchers, deployed SLBMs and their associated launchers, and deployed HBs, including 154 deployed heavy ICBMs and their associated launchers;

—6,000 warheads attributed to deployed ICBMs, SLBMs and heavy bombers, including 4,900 warheads attributed to deployed ICBMs and SLBMs; 1,100 warheads attributable to deployed ICBMs on mobile ICBM launchers; and 1,540 warheads attributable to deployed heavy ICBMs;

—the aggregate throw-weight of deployed ICBMs and SLBMs not to exceed 3,600 tons.[1]

For the purpose of accounting for ICBM or SLBM warheads, such a re-entry vehicle counts as 1 warhead. How-

ever, a limit of 10 RVs is set for both existing and new types of ICBMs and SLBMs.

Existing types of ballistic missiles are attributed with the number of warheads specified in the Memorandum of Understanding on the Establishment of the Data Base Relating to the Treaty. In the event of downloading on existing types of ballistic missiles, accountability is adjusted in accordance with special rules to prevent the RV balance from being upset, should one party decide, for instance, in a crisis, to revert quickly to the original higher number of RVs.

The number of warheads attributed to new types of ICBMs or SLBMs is the maximum number of RVs with which an ICBM or SLBM of that type has been flight-tested. In this connection, for the front sections of existing designs the number of accountable warheads must not be fewer than the nearest integer resulting from a division of 40 per cent of the accountable throw-weight of an ICBM or an SLBM by the weight of the lightest RV flight-tested on the ballistic missiles (BM) of that type. The 40 per cent rule was introduced to preclude instances where a ballistic missile was tested with a lower number of RVs although it could actually carry a greater number of them.

The rules for counting heavy-bomber warheads are given below.

For the USSR, each HB equipped for long-range nuclear ALCMs, up to a total of 180 such heavy bombers, shall be attributed with 8 warheads, and the United States shall be attributed with 10 warheads on no more than 150 HB. In excess of that number, such HBs shall be attributed with the number of warheads equal to the number of long-range nuclear ALCMs for which they are actually equipped.

The specifications of 8 warheads for the USSR and 10 warheads for the United States are average numbers reflecting the long-range nuclear ALCM delivery capability of Soviet and United States HBs, respectively.

Each HB equipped for nuclear armaments that are not long-range nuclear ALCMs shall be attributed with 1 warhead.

Following is a chart of reductions under the START Treaty.

| | *USSR* | | *USA* | |
|---|---|---|---|---|
| *Type of strategic offensive arms* | *Number of ICBMs, SLBMs and HBs* | *Number of warheads* | *Number of ICBMs, SLBMs and HBs* | *Number of warheads* |
| ICBMs . . . . . | 1 398 | 6 612 | 1 000 | 2 450 |
| SLBMs . . . . . | 940 | 2 804 | 672 | 5 760 |
| HBs . . . . . | 162 | 855 | 574 | 2 353 |
| Total . . . . . | 2 500 | 10 271 | 2 246 | 10 563 |
| Percentage reductions under START Treaty | 36.0 | 41.6 | 28.8 | 43.2 |

Taking into account the additional reduction announced by President Gorbachev on 5 October 1991, the number of warheads on Soviet strategic offensive arms will be reduced to 5,000, that is, by 51.3 per cent.

According to the data published on 1 August 1991, it had been the intention of the USSR, on a tentative basis, to reduce the number of ICBMs approximately by 400 (that is, approximately, by more than 30 per cent), the number of SLBMs by 500 (approximately 50 per cent) and not to reduce HBs. Naturally, those data are superseded by the latest statement by President Gorbachev that the USSR would carry out greater reductions.

The counting rules for HB warheads enable the two sides actually to exceed the agreed 6,000 limit. In view of the considerable United States advantage as regards the number of HBs, the United States may exceed that limit by a greater margin than the USSR (namely, by approximately 2,000 to 2,500 actual warheads, mostly on nuclear arms that are not long-range nuclear ALCMs).

This concession by the Soviet side is to some extent balanced by the fact that it preserves two kinds of strategic offensive arms which the United States does not possess—heavy silo ICBMs and road- and rail-mobile ICBMs. At early stages of the negotiations the United States insisted on a complete ban on both heavy and mobile ICBMs, but later on compromise solutions were found according to which the ban was replaced by limitations.

Mobile ICBMs are the only type of strategic offensive arms regarding which there exist numerical limitations on non-deployed systems: 250 ICBMs, including 125 for rail-mobile ICBM launchers, and 110 launchers, including 18 rail launchers. This limit precludes rapid deployment of additional mobile ICBMs using already existing non-deployed means and also limits the reload capability. The reload of mobile launchers can be carried out more rapidly than that of silo launchers—the term "rapid reload" means reloading a silo launcher of ICBMs in less than 12 hours or a mobile launcher in less than four hours after a missile has been launched or removed from such a launcher.[2] Moreover, additional measures are envisaged to preclude the rapid reload of a mobile launcher, which will limit the locations of non-deployed missiles and launchers as well as of transporter-loaders.

To enhance the efficiency of the verification of mobile ICBMs, their movement and locations must be limited.

Throughout the talks on the START Treaty, reference has been made to linking it to the ABM Treaty, which has been in effect since 1972. Such a linkage is a fact of life and certainly cannot be neglected, since the military and strategic balance of forces is affected, not only by offensive systems, but also by defensive ones capable of neutralizing some of the offensive systems. Nevertheless, it was essential to decide upon the way to reflect the interrelationship between strategic offensive arms and anti-ballistic missiles. Initially, the Soviet Union suggested that the sides undertake not to exercise the

right to withdraw from the ABM Treaty for a specified fixed period of time. The United States side was opposed to this proposal as well as to other forms of linking the two agreements in the Treaty texts. To remove this obstacle in the way of the Treaty, the Soviet side agreed to drop this formal linkage. At the same time, the Soviet side noted that extraordinary events referred to in article XVII of the START Treaty[3] also covered situations involving the withdrawal of one side from the ABM Treaty or a material breach of the Treaty itself.

The United States made a statement in response giving its views on this matter.

Some time later, declaring on 27 September 1991 an initiative on nuclear disarmament, United States President George Bush called on the Soviet leaders, in particular, to allow a limited deployment of non-nuclear defences in order to provide protection against limited missile strikes wherever they might come from without undermining the credibility of the existing deterrent forces.

In his statement in response, on 5 October 1991, President Gorbachev expressed among other things a willingness to discuss the United States proposal on non-nuclear anti-ballistic missile defences.

In addition to quantitative restrictions on strategic offensive arms, the Treaty envisages limitations on the qualitative improvement of strategic offensive arms. The production, testing and deployment of heavy ballistic missiles of a new type are prohibited. A ban is envisaged on the foreseen but so far non-existent new kinds of strategic offensive arms (ballistic air-to-surface missiles, MIRVed[4] nuclear air-launched cruise missiles). A procedure is envisaged for preventing the future development of strategic nuclear arms unknown today. The Treaty limits the modernization of the existing types of strategic offensive arms: in the event of the modernization of a ballistic missile, its throw-weight should

not exceed 21 per cent of the original throw-weight. It should be taken into account that modernization does not necessarily mean adding to the more destructive capabilities of the weapons. Upgrading also leads to lower cost (that is, cutting operational cost per unit of effectiveness) and enhances the safety of weapons, that is, improvement of its properties with a view to ruling out its accidental and unauthorized use.

## III

A scrupulously developed verification system enforces compliance with the START Treaty. No other agreement on arms limitation and disarmament has anything comparable in scope and detail in terms of verification procedures. Moreover, whenever we speak of the limitation and reduction of arms and not of the complete elimination of a given category, additional procedures are needed. Lastly, the fact that the basis of the verification system within the START framework was taking shape in the period when mutual mistrust between the sides was rather high has also played its role. That is why each party proceeded from the "worst-case" scenario; in other words, they took into account hypothetical cases of the most deliberate cheating—cases that were implausible, but theore--tically possible.

Compliance with the START Treaty is verified and ensured through the following measures:

—data and notifications exchange;

—national technical means (NTMs) of verification in combination with "cooperative measures"—display in the open, at the request of another Party, of ICBM launchers, heavy bombers and former heavy bombers to enhance the efficiency of NTMs;

—access to telemetric information;

—exhibitions and inspections of 12 different kinds;

—continuous monitoring at portals and along the perimeter of the ICBM production facilities for mobile launchers of

ICBMs with a view to confirming the number of missiles produced for mobile launchers (of all types of strategic offensive weapons: independent quantitative levels are envisaged only for mobile ICBMs—1,100 for deployed missiles and 250 for non-deployed missiles);

—establishment of the Joint Compliance and Inspections Commission (JCIC).

The JCIC is to be established after signature of the Treaty but prior to its ratification. Its goals are:

—to resolve issues related to compliance with the obligations assumed;

—to agree on additional measures that might be necessary to enhance the viability and effectiveness of the Treaty; and

—to resolve issues related to the extension of the corresponding provisions of the Treaty to new kinds of strategic offensive weapons.

The JCIC shall be convened at the request of either party.

## IV

Even at the time when the Treaty on strategic offensive arms was being negotiated, both parties began to articulate certain ideas with regard to the follow-on measures after the conclusion of the Treaty. As a result, on 1 June 1990 a joint statement regarding follow-on negotiations on nuclear and space arms and on the further enhancement of strategic stability was made at the Washington Soviet-United States summit meeting. The two sides agreed to engage in new negotiations on strategic offensive arms and on the linkage between strategic offensive and defensive arms, building on the results of START I. Having done so, the two sides agreed to place emphasis during such new negotiations on the elimination of first-strike incentives and on the reduction of the concentration of warheads, on strategic delivery systems and on the preferential choice of systems of enhanced survivability.

The rapid pace of events in the world not only does not eliminate this task but creates more favourable conditions for its speedy accomplishment, especially since we now have the Treaty on strategic offensive arms, which will serve as a good foundation for achieving further progress. Naturally, new agreements regarding strategic offensive arms that might emerge in the future will not supplant, but will rather supplement, the Treaty.

The new era that came to replace the period of confrontation is gaining ground. The methods of negotiating reductions in armaments are complemented by new forms–unilateral measures and steps taken on the basis of mutual example. As a result of reciprocal initiatives by President Bush and President Gorbachev, such steps have already been taken to reduce the state of combat readiness of ICBMs and heavy bombers and to limit the qualitative improvement of ICBMs and certain types of nuclear weapons for heavy bombers. The Soviet side has also declared unilaterally that it will reduce the number of nuclear warheads not to the level of 6,000 units as provided for in the Treaty on strategic offensive arms but to the level of 5,000.

It is possible that steps undertaken on the basis of mutual example might necessitate certain preliminary coordination.

Naturally, the traditional practices of negotiation will also retain their importance. In any case, they may be needed to achieve the further reduction of strategic offensive weapons roughly by half, as was proposed by Mikhail Gorbachev. It would be in line with the requirements of strategic stability and of the diminishing concentration of warheads on strategic delivery vehicles if due attention were paid to measures related to MIRVed ICBMs in the course of further negotiations.

## V

The disintegration of the USSR and the emergence of independent States which proclaimed themselves a Commonwealth became a new and important factor both for the process of ratification of the Treaty and for the further reduction of strategic armaments.

By the Agreement on Joint Measures with respect to Nuclear Weapons the four independent States which have strategic armaments on their territories—Belarus, Kazakhstan, Russia and Ukraine—undertake to present the START Treaty to their respective Supreme Soviets for ratification (see "Documentation Relating to Disarmament", below). All of the eleven States members of the Commonwealth have agreed to comply with international treaties concluded by the USSR.[5]

Russia has already declared itself the successor to the Soviet Union in the field of international undertakings. Certainly, this is true in the case of the START Treaty, but strategic offensive armaments are located not only in Russia (83.6 per cent) but also in Ukraine (8.48 per cent), Kazakhstan (5.76 per cent) and Belarus (2.16 per cent). So it is evident that all four of these States should guarantee the implementation of the START Treaty. At the same time, the Treaty should retain its bilateral nature, otherwise a review and an amendment process would be required. A search for appropriate juridical arrangements is now under way.

As for further measures relating to strategic offensive arms, States members of the Commonwealth have agreed to conduct a joint policy in the field of international security, disarmament and arms control. They undertake to negotiate without delay among themselves and with other States which were a part of the Soviet Union but which are not members of the Commonwealth with a view of ensuring guarantees and elaborating mechanisms for implementing those treaties.

**Notes**

1 As of 1 September 1990, the aggregate throw-weight of deployed ballistic missiles was 6,626.3 tons for the USSR and 2,361.3 tons for the United States.

2 Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, Definitions Annex, item 87.

3 Article XVII, paragraph 3, of the START Treaty provides for the right to withdraw from it if a party decides that "extraordinary events related to the subject-matter of this Treaty have jeopardized its supreme interests".

4 The acronym MIRV stands for multiple independently targetable re-entry vehicle.

5 Alma Ata Declaration of 21 December 1991 (A/47/60-S/23329), annex II.

# Nuclear Non-Proliferation and Safeguards: New Challenges

## IAEA Safeguards: New Challenges

Hans Blix

There has always been an acute awareness of the fact that some of the materials, technologies and expertise that are relevant for the peaceful uses of nuclear energy can be equally of use for the making of nuclear weapons. Since the launching of the "Atoms for Peace" programme in 1953,[1] the promotion of the peaceful uses of nuclear energy has, therefore, invariably been linked to policies and measures for preventing the proliferation of nuclear weapons. By and large, this two-pronged approach has been successful. There are now some 430 nuclear power plants and an even larger number of facilities for other applications of nuclear energy (for example in medicine, agriculture and industry), yet the number of nuclear-weapon States has remained very limited.

Many different factors account for the relative success of non-proliferation efforts. One important factor has been the common interest of the five States officially recognized as nuclear-weapon States—China, France, the former Soviet Union, the United Kingdom and the United States—in impeding any further horizontal spread of nuclear weapons, a common interest that transcended their differences during the cold war. Another factor was that, until recently, most States that were not protected by the nuclear umbrellas of major military alliances were not at a technological level that would make it

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possible for them to develop nuclear weapons. Yet other factors have been the public aversion to nuclear weapons and the ability to provide verifiable, treaty-based assurances of non-proliferation. At the present time, in a world moving towards greater *détente* and nuclear disarmament, and in which a growing number of States may be reaching a technological level that could make it possible for them to construct nuclear weapons, it is fortunate that the non-proliferation precept has become strongly established. In the recent past, three so-called threshold States—Argentina, Brazil and South Africa—have entered into legally binding non-proliferation commitments that are subject to verification, and the subject of a nuclear-weapon-free zone has appeared on the agenda of the Middle East peace talks.

Thus, there are some reasons for optimism about the prospects for non-proliferation. However, the case of Iraq has raised several important questions. One of them is how International Atomic Energy Agency (IAEA) safeguards, which are designed to give confidence about respect for non-proliferation commitments, can be strengthened so as to minimize the risk that a clandestine nuclear programme may go undetected.

IAEA safeguards were a radical novelty some 30 years ago when the first on-site inspection took place. They have been instrumental in creating confidence in the peaceful nature of many nuclear programmes and have constituted a *sine qua non* for nuclear trade. Moreover, they have served as a source of inspiration in the wider discussions of arms control.

The case of Iraq was, however, a reminder of some of the limitations of the present safeguards system. It is important, therefore, to examine the evolution of IAEA safeguards and the current efforts to strengthen them.

The Agency was created in 1956 with the twin objectives of promoting peaceful uses of nuclear energy and of

ensuring that assistance provided by it or at its request, or under its supervision or control, was not used in such a way as to further any military purpose.

Under the IAEA Statute, safeguards are obligatory for IAEA-related activities. Other nuclear activities can be subject to safeguards, but only at the request of the State or States concerned. This statutory scheme for the application of safeguards was based on an assumption that nuclear know-how would be confined to a privileged few and that IAEA would be the centre of most nuclear activities.

By the mid-1960s, with all the permanent members of the Security Council already in possession of nuclear weapons, it became clear that this statutory scheme alone would not prevent the spread of nuclear weapons. Nuclear technology was being acquired by more and more countries, and the assumption that IAEA would be the principal channel for the transfer of nuclear technology had proved incorrect.

A major new approach was taken through the development of what is referred to as the "non-proliferation commitment": the legal obligation not to manufacture or acquire nuclear weapons and to accept IAEA safeguards on all existing and future nuclear activities. This commitment was first embodied in a regional treaty—the 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America, known as the Treaty of Tlatelolco.[2] With the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) a universal approach was taken. Under this Treaty, open to all States, non-nuclear-weapon States assume an obligation, *inter alia*, not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, and to conclude an agreement with IAEA for the application of safeguards to all source or special fissionable material in all peaceful nuclear activities within their territories, under their jurisdiction, or carried out under their control anywhere.

Subsequent regional non-proliferation commitments

were embodied in the 1985 South Pacific Nuclear Weapon Free Zone Treaty (the Treaty of Rarotonga) and the 1991 Argentina-Brazil Agreement for the Exclusively Peaceful Uses of Nuclear Energy.[3] Through these treaties, IAEA safeguards have become obligatory in character and comprehensive in scope for the 146 States parties to one or other of them.

## The Application of Safeguards

The actual application of safeguards requires the conclusion of an agreement between IAEA and the State in which the safeguards are to be applied. This is irrespective of whether the application of safeguards follows and fulfils a prior legal obligation to accept safeguards—as in the case of safeguards following adherence to the NPT—or is the result of a separate voluntary undertaking.

The safeguards agreements set out the parties' basic rights and obligations relevant to the application of safeguards. These include the State's basic undertaking, which is to be verified through the application of safeguards, its obligation to maintain a system of accounting and control for all nuclear material subject to safeguards, and its obligation to provide the Agency with all information relevant to the application of safeguards. They also include the obligation on the part of IAEA to verify the State's compliance with the basic undertaking, its obligation to avoid "in doing so" hampering the economic and technological development of the State and its obligation to protect the State's commercial, industrial and other confidential information that comes to the knowledge of IAEA through the application of safeguards.

Detailed implementation procedures are found in a set of technical "subsidiary arrangements", which are tailored to the specific requirements of safeguarded facilities.

Four categories of safeguards agreements have been entered into by IAEA.

First, there are agreements with non-nuclear-weapon

States that have made a binding non-proliferation commitment in a multilateral or a bilateral context. This includes States parties to the NPT, the Treaty of Tlatelolco, the Treaty of Rarotonga, and the Argentina-Brazil Agreement for the Exclusively Peaceful Uses of Nuclear Energy. These safeguards agreements cover all the nuclear activities of the State—present and future.

Secondly, there are agreements with non-nuclear-weapon States that have not made a binding non-proliferation commitment. These agreements are normally entered into upon the conclusion of a project agreement between IAEA and a member State, upon unilateral submission by a State, or upon the conclusion of a supply agreement between the State and a supplier State requiring the application of IAEA safeguards. Agreements in this category cover only specified facilities, equipment and material. In these cases, assurances by IAEA are necessarily limited to the facilities, equipment or material submitted to safeguards and do not extend to the totality of the State's nuclear activities. This is the case of IAEA safeguards in Algeria, Cuba, Israel, India and Pakistan, none of which has accepted safeguards on its entire nuclear programmes—present and future.

Thirdly, there are agreements with nuclear-weapon States. All five of the recognized nuclear-weapon States have made declarations, not required by any treaty, to accept the application of safeguards on some or all of their peaceful nuclear activities. As a result, IAEA has entered into agreements with each of them. The agreements with nuclear-weapon States are obviously not designed to verify non-proliferation. They are meant to broaden the Agency's safeguards experience, to affirm that nuclear-weapon States are not favoured by being exempt from safeguards on their peaceful activities, and to promote the principle that all peaceful nuclear activities in all States should be subject to safeguards.

Fourthly, there is an agreement with a non-nuclear-

weapon State which had not yet made a non-proliferation commitment but which was ready to make such a commitment as part of the safeguards agreement. This is the safeguards agreement concluded with Albania before it became a party to the NPT.

### The Nature of the IAEA Safeguards System

IAEA safeguards are technical means of verifying compliance with legal obligations. Their objectives are to assure the international community of the peaceful nature of safeguarded nuclear activities and, through the risk of early detection, to deter the diversion or misuse of safeguarded materials or facilities.

Agency safeguards are limited to verifying compliance by a State with its specific undertakings under the safeguards agreement. They are based primarily on information provided by the State as to the existence of nuclear material or equipment that should be subject to safeguards pursuant to the agreement. Safeguards do not prevent States from acquiring nuclear material, facilities or technology, nor can they assure the physical protection of nuclear material or facilities or, by themselves, prevent a violation of a safeguards agreement. Safeguards cannot read the future intentions of States, but are designed to provide an early warning of a violation, by a State, of its undertakings, setting in motion response mechanisms within IAEA, among States and in the United Nations.

The IAEA safeguards system has three basic elements which, taken together, are designed to verify that no nuclear material is diverted for non-peaceful purposes. These elements are: material accountancy, containment and surveillance measures, and on-site inspections.

Material accountancy establishes the quantities of nuclear material present in the State and the changes that take place in those quantities. Reports on the nuclear material

subject to safeguards in the State are provided by the State itself to IAEA.

Containment and surveillance measures are designed to take advantage of physical barriers such as walls or containers to restrict or control access to, or the movement of, nuclear material or equipment, and to reduce the probability of undetected movements. These measures include the use by IAEA of seals, automatic cameras and videotape recorders, which would reveal the removal of nuclear material.

On-site inspections are designed to verify the information provided to IAEA. During an inspection, the inspectors perform a number of functions—for example, they check that fuel quantities actually match the reported quantities, they take independent measurements and samples, they verify the functioning and calibration of instruments, and they apply surveillance and containment measures.

The type, intensity and frequency of inspections vary with the kind of facility and the particular circumstances. Verification is concentrated on the stages of the fuel cycle that involve weapons-grade nuclear materials, such as plutonium and highly enriched uranium.

The Agency carries out ad hoc, routine and special inspections under conditions prescribed in the safeguards agreements. Ad hoc and routine inspections constitute the bulk of inspection activities. During ad hoc and routine inspections, IAEA has access to the relevant records and to locations where safeguarded nuclear material is declared to be present. The Agency may carry out a certain fraction of routine inspections unannounced.

Special inspections are carried out if IAEA has concluded, through an initiative taken by the State or on its own, that unusual circumstances as specified in the applicable agreement warrant them. Under comprehensive safeguards agreements, the Agency may conduct special inspections to verify information provided by the State in special reports, or

if it considers that information made available by the State "is not adequate for it to fulfil its responsibilities". These responsibilities under comprehensive safeguards agreements include the obligation to ensure that safeguards will be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, or under its jurisdiction or control. In carrying out special inspections under comprehensive safeguards agreements, IAEA may obtain access to information or locations additional to those to which it has access during routine and ad hoc inspections.

The circumstances under which IAEA might consider that information provided by a State was inadequate for it to fulfil its responsibilities and under which a special inspection was warranted would naturally depend on the particulars of each situation. In all cases, however, the information provided has to be assessed in good faith by the Director General or the Board of Governors, as the case may be.

### Efforts to Strengthen Safeguards

Safeguards are a set of measures designed to create confidence that States are complying with specific non-proliferation obligations. The continuation of such confidence is essential for the transfer of nuclear technology and for the maintenance and evolution of the non-proliferation regime. For States to accept obligations that are directly related to forgoing a military option, it is essential that they be assured that such obligations are respected by other parties—especially neighbouring parties—to the compact. It is natural, therefore, that States should want safeguards to be subject to periodic evaluation so as to ensure their continuing effectiveness. The latest such evaluation was made during the 1990 Review Conference of the Parties to the NPT. Many recommendations relevant to the strengthening of NPT safeguards in the light of new technological and political developments

were discussed at that Conference, and have since been followed up in IAEA.

Iraq's clandestine enrichment programme in violation of its safeguards agreement with IAEA has brought out dramatically both the strengths and the weaknesses of the IAEA safeguards system and has prompted efforts to strengthen it.

The fact that for its weaponization programme Iraq did not use nuclear material which was under safeguards inspection was probably due to the effectiveness of IAEA safeguards. It would have been discovered and have triggered an alarm. On the other hand, the ability of Iraq to construct and operate undeclared uranium enrichment facilities without detection highlighted a weakness in the system. The system has worked well in providing assurances with regard to the non-diversion or other misuse of material and facilities declared by the State, but it was not designed to detect possible undeclared material and facilities.

The IAEA secretariat and Board of Governors are currently engaged in an effort to close this loophole and to identify other areas where comprehensive safeguards need to be strengthened and streamlined. A number of papers are under consideration by the Board of Governors, and others are being prepared.

In a paper that is currently the focus of attention, the Director General of IAEA proposes that he activate and make full use of the Agency's right to carry out special inspections. As already indicated, IAEA has the right and the obligation to *ensure* that safeguards *will be applied* to all nuclear material in peaceful nuclear activities in States with comprehensive safeguards agreements. The agreements do not distinguish between declared and undeclared material. The Agency's obligation is to ensure that *all* material subject to safeguards is in fact safeguarded. A way for IAEA to fulfil that obligation is to exercise its right of special inspection.

The procedures for carrying out special inspections are

identical in all comprehensive safeguards agreements. If IAEA considers that information made available by the State is not sufficient to enable it to fulfil its responsibilities under the agreement, IAEA shall forthwith consult with the State. In the light of the consultations, IAEA may request access "in agreement with the State" to additional information or to locations in addition to those declared by the State. Any disagreement concerning the need for such access shall be resolved in accordance with the dispute settlement procedures provided for in the agreements. However, if the Board of Governors determines that action by the State to grant access for the Agency to carry out a special inspection is essential and urgent, the State has to take the required action without delay, irrespective of whether dispute settlement procedures have been invoked.

The actions to be taken by the Board in the event of non-compliance by the State with its safeguards obligation—for example, refusal to allow the access demanded by the Board—are provided for in the Agency's Statute and in the Relationship Agreement between IAEA and the United Nations. Article XII.C of the Statute provides that the "Board shall report the non-compliance to all members and to the Security Council and General Assembly of the United Nations". The Relationship Agreement contains a similar provision.

The Agency has, so far, had occasion to carry out special inspections only at locations declared by the States concerned; the special inspection mechanism provided for in comprehensive safeguards agreements has not been used in order to secure access to undeclared nuclear material or facilities because no sufficiently specific information has been before IAEA suggesting that such access was called for.

Although the IAEA inspections in Iraq have been carried out pursuant to a Security Council resolution—resolution 687 (1991)–under Chapter VII of the United Nations Charter

and are not special inspections under a comprehensive safeguards agreement, the lesson learned in Iraq is that three conditions need to be fulfilled in order to make special inspections under comprehensive safeguards agreements an effective instrument for the detection of undeclared nuclear material.

*First*, the inspectorate must have access to relevant information. No inspectorate can comb the entire territory of a State in a blind search for proscribed facilities or activities. They must have information indicating locations that merit inspection. Apart from information routinely collected in the course of safeguards activities, publicly available information and relevant information in the possession of member States may give such indications. This includes reports on the production, import and export of nuclear material and of sensitive equipment and non-nuclear material. It also includes information available to States through national technical means. The information would have to be analysed for its veracity before the Director General or the Board of Governors could decide whether there was any justification for setting in motion the procedures for a special inspection.

*Secondly*, The inspectorate must have a right of timely and unrestricted access to any location which, according to credible information, might be an undeclared nuclear installation or contain undeclared nuclear material.

*Thirdly*, IAEA must be able to exercise its right—under its Statute and the Relationship Agreement with the United Nations—of access to the Security Council if a State rejects a request for a special inspection or refuses access. Awareness of possible recourse to the Security Council may deter States from failing in their duty under a safeguards agreement.

In another paper submitted to the Board of Governors of IAEA it is proposed that the Agency be given design information on nuclear facilities as soon as the decision to construct a facility or to modify an existing facility has been

taken. The early provision of such information demonstrates an openness that is likely to inspire confidence and to facilitate the effective and efficient implementation of safeguards.

Other papers under preparation deal with: ensuring universal reporting of the production, import and export of nuclear material, sensitive equipment and relevant non-nuclear items in States with comprehensive safeguards agreements; prompt and unhindered access for IAEA inspectors; and effective application of safeguards in States with small, but significant, quantities of nuclear material.

As IAEA goes through the process of adjusting its safeguards to new technological and political realities, it is important to bear certain facts in mind.

*First*, safeguards are not a static concept. They have to be constantly adjusted to take account of technological developments. They are aimed at a moving target and always have to be in focus.

*Secondly*, safeguards are not a uniform concept. Different models have been developed to deal with different legal commitments and political realities. They vary from safeguards designed to verify specified facilities in countries that have not accepted comprehensive safeguards to those designed to verify the complete nuclear fuel cycle in a State, and while certain safeguards models have been developed for application as the only safeguards system, others have been developed to operate in conjunction with other safeguards; this is so in the case of the EURATOM countries and of Argentina and Brazil, where EURATOM (the European Atomic Energy Community) and ABACC (the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials) apply their own safeguards.

*Thirdly*, because the objective of safeguards is to provide assurance and create confidence, the degree of intrusiveness required may vary with the degree of trust or distrust existing in different areas. In some regions and in the relations

between some countries where hostility and fear have reigned, more intrusive safeguards may be needed to create confidence. A case in point is the Middle East. The Director General of IAEA has been requested by the Agency's General Conference to prepare a model safeguards agreement that could apply to that region, and preliminary contacts indicate a need for considerably more far-reaching verification and control measures than those practised under existing comprehensive safeguards, possibly including mutual inspections by the parties themselves in addition to IAEA safeguards.

*Fourthly*, safeguards are not an infringement of a State's sovereignty. States accept safeguards as they do other international obligations, because they perceive them to be in their national interest. Opening up installations for international inspection, waiving or relaxing visa requirements for inspectors and providing a transparent flow of information on nuclear activities do not diminish a State's sovereignty, but rather help create the conditions necessary for peace, in which sovereignty can be enjoyed.

*Fifthly*, safeguards cost money, and money has to be made available and be assured if the safeguards system is to work effectively and without interruption. Regrettably, the financing of safeguards, like the financing of so many other activities of international organizations, is today inadequate and in jeopardy.

At the beginning of 1992 IAEA is having to reduce all budgeted expenses by 13 per cent because of uncertainty about the availability of funds. This will not strengthen safeguards. Nevertheless, thinking and planning regarding safeguards must proceed on the assumption that reason will prevail and that solutions will be found to the current financial problem.

Developments during the past few months suggest that a universal non-proliferation regime could become a reality in the not-too-distant future. It is therefore important to ensure that adequate machinery for verifying such a universal com-

mitment is ready. The process of taking a hard, fresh look at safeguards has begun. To complete it, imagination, resolve and resources are required.

**Notes**

1 See *The United Nations and Disarmament, 1945-1970* (United Nations publication, Sales No. E.70.IX.1), p. 50.

2 On 3 July 1990, the Agency for the Prohibition of Nuclear Weapons in Latin America decided to add to the legal title of the Treaty the term "and the Caribbean", in conformity with article 7 of the Treaty.

3 See verbatim record of the 602nd meeting of the Conference on Disarmament, held on 15 August 1991 (CD/PV.602), p. 40.

# NPT Safeguards Today and Tomorrow

Ryukichi Imai

With the ending of the cold war, there has been a definite acceleration in the pace of nuclear weapons reduction worldwide, and simple bilateral discourse on the subject seems to be moving gradually towards a broader, multilateral process. The actual control of nuclear weapons has ceased to be the sacrosanct issue it once was.

This subject, now frequently addressed in the mass media, has become one of vital concern to all. What has happened, or what is likely to happen, to the many strategic and tactical nuclear weapons in the hands of what used to be the military infrastructure of the Soviet Union? This is a matter of global concern. People in many countries are discussing the control of these weapons, or lack thereof, in the hands of independent republics, members of the new Commonwealth. It is entirely possible that, in spite of the years of effort to make the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) work, the number of States with nuclear weapons might have doubled instantly on 19 August 1991, the date of the aborted Soviet coup. The manner in which this issue is handled

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internationally will have profound effects on the outcome of the next NPT Review Conference, to be held in 1995.

The situation in Iraq raised a number of issues which, so far, have managed to escape full-blown public attention. The International Atomic Energy Agency (IAEA) safeguards (spelt out in Information Circular (INFCIRC) 153, and established in accordance with article III of the NPT by the Safeguards Committee in 1970) are intended to deter proliferation by imposing a considerable risk of detection of the diversion of significant quantities of nuclear material. In Iraq, the international community confronted a State party to the NPT which was not deterred by a probability statement of diversion (see "NPT Safeguards" below) and which in the end had to be physically stopped from carrying out weapons-oriented programmes. Clandestine material and clandestine facilities became new focuses of attention.

These issues present complicated legal questions involving interpretations of both the NPT and the safeguards agreement. An even more serious problem is the determination of what may justifiably trigger the mechanism for forced inspection regarding either clandestine material or facilities. When the suspicion results from the use of national technical means (NTM), there may arguably be a case for international action in view of precedents in United States–USSR nuclear-arms control agreements. If less comprehensive and less well-established charges can trigger a mechanism, there is serious danger of abuse. There should be, in any case, well-defined procedures before an international organization undertakes an operation which constitutes a challenge to national sovereignty. One cannot expect a text such as Security Council resolution 687 (1991)[1] to be always available to back up action against a violator. One should also remember that the IAEA safeguards went through a period of being suspect as an instrument for industrial espionage, and it would not be desirable for IAEA to try to operate its own CIA or KGB. In any

event, output from the inspection system is extremely sensitive and needs to be handled with the utmost care because it could implicate a sovereign State as possibly being in violation of treaty obligations.

## Intensified Concerns

The NPT verification process in the post-cold-war period needs to be revamped in the two areas outlined below.

### Stronger inspection authority

Inspection authority should be strengthened so that undeclared facilities and undeclared material may be subject to international control. It is necessary to be able to define clearly the legally acceptable triggering mechanism for such forced inspection. Challenge inspections allowing inspectors to carry out their work in any location when a certain set of conditions are satisfied (as is contemplated in a chemical weapons treaty) are extreme cases. In the opinion of those of us who originally drafted this document, the special inspection referred to in paragraph 73 (*b*) of INFCIRC/153 has been interpreted too narrowly. It is a matter of striking a correct balance between effectiveness and non-intrusiveness, and paragraph 73 (*b*) may need further clarification in writing in order to avoid confusion.

### Orderly technology transfer

There will be an increasing need to agree upon and arrange for the orderly international transfer of sensitive technologies.

—Multilateral NTM requires the transfer of, or cooperation in, satellite-based information gathering and transmission as well as the processing of such information.

—In order to avoid the unrestrained transfer of weapons-related technologies, a new regime has to be worked out to supplement the "London Guidelines" (which apply to NPT-

related technologies or components). Work along these lines is already under way. This will entail making very difficult and sensitive decisions which require the drawing of an imaginary dividing line between the proliferation of weapons and freedom of international transfer of scientific and industrial knowledge and hardware.

## NPT Safeguards

In order to clarify the problems, it is useful to examine the NPT safeguards.

When the Safeguards Committee met in Vienna in 1970, article III of the NPT presented some difficulties, because paragraph 1 spoke of "diversion of nuclear energy" and separately of "source or special fissionable material". The Committee decided that those who had drafted the NPT did not really understand what was meant by nuclear energy, because it might be construed to mean that, for example, electricity generated in nuclear power stations should not be diverted for use in military or weapons facilities. The same type of problem exists today in the prohibition of a military attack on peaceful nuclear facilities. The statements about material are very clear, and therefore INFCIRC/153 has had more or less to slip in facility inspectors through the back door with such devices as subsidiary arrangements and facility attachments. This has led to some inevitable ambiguities regarding treaty obligations to inform IAEA of nuclear facilities under construction (paragraph 42 of INFCIRC/153 stipulates "as early as possible" and not "within 180 days", as some seem to believe). Clandestine construction of uranium enrichment, plutonium separation, or weapons fabrication facilities may not be a violation of the letter of any obligation unless nuclear material (source or special fissionable) is placed inside them.

A scenario often described by Committee members during the 1970 meetings may explain the difficulties. Sup-

pose an inspector observes a large number of plutonium metal hemispheres being machined under the pretext that they are new and commercially secret breeder reactor fuel. The material balance of plutonium shows nothing wrong or missing (that is, no diversion) and the inspector is not at liberty to disclose information about commercially sensitive technologies, therefore the inspector has nothing to report to the headquarters. He also observes that next door to the plutonium plant is a large workshop where people are building high-explosive lenses. The inspector becomes very suspicious, but has no basis for airing any concerns because high explosives are not nuclear material, and he is prohibited from mentioning any non-nuclear commercial activities he may by chance have observed. The reported nuclear activity in the Democratic People's Republic of Korea may not be very different from this hypothetical case, which so seriously concerned those gathered in Vienna.

Another point realized by the Committee's technical people, but which they failed to communicate fully to their non-technical colleagues, was the tricky nature of the probability statement. The Director General of IAEA would report to the Board of Governors that with an 80 per cent confidence level, he could not confirm that there had *not* been a diversion by a State party. The Board would very likely ask, "What in plain language does that confidence level mean?" The Director General would have to refer the matter to his technical staff, who would explain that this was a statistical statement, which more or less meant that there was a 20 per cent chance that diversion had not taken place. Can an international body take action against a sovereign State when there is a 20 per cent chance that it has not violated treaty obligations? Many Committee members were confident that this type of accounting of material would act as a deterrent. Obviously they foresaw very little chance of ever having actually to call such a Board meeting.

In actual practice, with the increasing throughput of nuclear material in varieties of nuclear fuel cycles, it became obvious that accumulating measurement errors over time would leave more than a significant quantity of plutonium or highly enriched uranium unaccounted for.[2] Mathematically, there is no way other than to be satisfied that the material balance is closed independently every six months or so in every material balance area (MBA). The MBA may be a reactor core, oxide fuel pelletizing room, or an irradiated fuel cooling pond. Put cynically, the amount of material unaccounted for could total 10 to 50 bombs every six months (depending on the number of MBAs in a country).

There is no question that those in charge of the implementation of safeguards in IAEA have been working seriously to carry out what they believe to be their mandate and to structure a workable safeguards system. There have been some comments that inherent difficulties mentioned above were already well appreciated at the time of the drafting of INFCIRC/153, but had somehow failed to receive sufficient attention through the implementation stages. Accumulated safeguards efforts and the allocation of safeguards resources according to the amount of nuclear material in the various nuclear fuel cycles (that is, without any other consideration of assigning different weights) undoubtedly reach a saturation point when it is understood that safeguards resources, in both human and monetary terms, have a limit. In fact, already in Vienna in 1970 there were considerable calls for the financing of safeguards to be related to the benefits countries expected to reap from the extensive exercises. The points mentioned above serve to emphasize the importance of the deterrent nature of this instrument. There is nothing in the document to restrain those in charge in IAEA from devising methods which are less nuclear-material measurement focused than is the current practice.

Immediately after the adoption of INFCIRC/153, Japan

took the initiative in the creation of the Standing Advisory Group on Safeguards Implementation (SAGSI) and tried to point out the importance of this consideration to IAEA and NPT member States. It can be claimed that efforts have continued to build on the imaginative approach of the initial period, with the result that the safeguards activities do not get buried under the heavy burden of routine work.

### Rethinking the Cases of North Korea and Iraq

The problem with North Korea is obvious: only on 30 January 1992, after several years of delay, did it sign a safeguards agreement as called for in article III of the NPT (see "Documentation Relating to Disarmament"). Although many States parties to the NPT have not yet concluded safeguards agreements with IAEA, they are countries with little or no nuclear research activity. Even though an agreement has now been signed by North Korea and a pledge made to place all its peaceful nuclear activities under full-scope safeguards, there is still the problem of ratification, and that of the amount of time that may be required under North Korean law, about which few claim to be knowledgeable. Even after the agreement has entered into effect, the North Koreans are under no clear obligation to report, much less to place under safeguards, the large thermal output reactor and what is suspected to be a plutonium extraction plant nearby. According to intelligence reports in the world press, these two facilities will be completed by 1995, and, as mentioned above, a country is under no clear obligation to report its nuclear facilities when there is no nuclear material housed within it. At most, it is required to provide design information "as early as possible".

Given the implication of possible nuclear arms in the northern half of the Korean peninsula for security considerations in the region, and the way in which various experts have underestimated the work of Saddam Hussein's regime, this is hardly a satisfactory situation. Not many countries would be

against the mandatory "voluntary submission" of design information at the inception of the development of a nuclear facility, or against reporting such benchmarks as the start of construction and the granting of operating permits from time to time. Such cooperating countries could be placed in one category: let us call it "category A". In fact, in most countries this is open information, available in government annual reports and in trade journals. Unwillingness to enter into such arrangements may be taken as an indication of possible non-compliance, and IAEA may be justified in placing such countries in a second category, "category B", where extra attention could be directed to possible unannounced nuclear activities.

The situation of inspecting Iraq would be somewhat complicated if there were no such extraordinary authorization as Security Council resolution 687 (1991). Iraq is one of the original signatories of the NPT and has been under IAEA safeguards from the beginning. It has not yet manufactured nuclear weapons or other nuclear explosive devices. Article III of the NPT states that safeguards arrangements should be applied to all source or special fissionable material in all peaceful nuclear activities. If, as is reported, Iraq was producing its own natural uranium and using it in a very large calutron plant in Tarmiya to produce 465 grams of 4 per cent enriched uranium, the only way for the Iraqi regime to claim non-violation of paragraph 2 of the safeguards agreement (which is a repetition of article III of the NPT regarding all source or special fissionable material) would be for it to claim that it was for non-peaceful activities. In order for that to be effective, Iraq should have identified the material and informed IAEA according to paragraph 14, which it did not do. Even if IAEA had known of wide-ranging activities in preparation for nuclear weapons in Iraq, it could not have done anything in particular under the current practice. As clearly stipulated, the IAEA Board may take major action only when it "finds that the Agency is not able to verify that there has been no

diversion", and this, as mentioned earlier, refers to each MBA for a significant quantity with something like an 80 per cent confidence level. In the case of highly enriched uranium, the current significant quantity is 25 kilograms, which is far more than 465 grams of 4 per cent enriched uranium.

If the story of advanced G-2 centrifuge machines in Iraq is true, this alone does not place the country in violation of NPT or the safeguards agreement, because no fissionable material had been placed in the enrichment test facilities. Extraction of 3 grams of plutonium was also reported, and one is not quite sure how this was carried out. The significant quantity for plutonium is 7 kilograms, and 3 grams is a minute amount. One only notices that the plutonium extraction exercise has been performed without notifying IAEA of the intention. This implies a very serious problem because plutonium extraction is a far more commonplace route—indeed it is the expected one—for nuclear weapons diversion in the third world.

There are several lessons to be drawn from the cases of North Korea and Iraq:

1 Provision for voluntary submission of design information and construction schedules of nuclear facilities should be included in the safeguards agreement. Those that comply should be placed in category A. Others should be placed in category B, and will be subject to extra attention by the parties to the NPT for any indication of possible nuclear fuel cycle activities.

2 Export control of fuel-cycle technology and components, including software, should be agreed on very carefully, and any suppliers found to be in violation of, or in insufficient exercise of, the agreements should be duly reprimanded, including those who may be named responsible for supplying information and components to Saddam Hussein's projects.

3 A multilateral international mechanism should be worked out to establish a depository of information gathered

through NTM and other non-routine means of detecting possible violation of treaty obligations. The violators, as in the case of Iraq, would be dealt with by this means to make sure that only well-founded suspicion could pass through this filter. Only when this mechanism has determined that a particular suspicion is well founded may IAEA be authorized to take action. A single organization such as IAEA should not have the right to collect covert information and/or to determine suspicion on its own unless presented with sufficient evidence *and* unless the Board of Governors has determined to act, and has so directed the secretariat.

4 IAEA needs to reallocate safeguards resources with less of a focus on the category A countries, which already possess a "national system of accounting for and control of all nuclear material" (INFCIRC/153, para. 31). Deterrence effects of inspection activities can be achieved with a very low level of confidence statistically, thus requiring the deployment of considerably fewer inspectors in the field. Exercise of this sort of judgement, given due reference to criteria, should be within the terms given to organizations such as IAEA as specifically spelt out in paragraph 81 of INFCIRC/153. Insufficient consideration seems to have been given in the past to the application of criteria of this type.

## Conclusion

IAEA is the only international mechanism entrusted with verification of arms control arrangements, namely those relating to article III of the NPT. The provision of safeguards was only one of the reasons why IAEA was established. While at the time it was found convenient in article III of the NPT to make use of IAEA, neither the Eighteen-Nation Committee on Disarmament, which drafted the original text of the NPT, nor IAEA was aware of the extent and magnitude of the task that was to be undertaken. In fact, the safeguards document had to be rewritten in 1970 to accommodate NPT require-

ments. This also explains why the 1970 amendments were intended to be flexible enough to accommodate new situations as they arose.

The events of 1991 have made evident the need for further clarification of the safeguards system in accordance with the original intention of the 1970 safeguards understanding. This article is an effort to indicate the direction to be followed. It is of fundamental importance that the credibility of the safeguards system be strengthened as we look towards the NPT Review Conference of 1995. It will also present a worthwhile precedent when one contemplates the structure and content of further international verification regimes, such as the use of multilaterally owned and operated satellites, to cover such a variety of technologies as those relating to chemical weapons and long-range ballistic missiles.

**Notes**

1 Security Council resolution 687 (1991), adopted during the Gulf War, set the terms for termination of the conflict. It clearly specified the term "nuclear-weapons-usable" material, which has so far not appeared in any nuclear or other international arrangements.

2 A "significant quantity" is the quantity estimated to be sufficient to make one atomic bomb.

# Safeguards: New Threats and New Expectations

Lawrence Scheinman

## The Context of Safeguards

The revelation, in the aftermath of the cold war, of an extensive and previously unknown Iraqi nuclear-weapons programme has raised hard questions about the efficacy of the non-proliferation regime and its supporting international safeguards system. What happened in the case of Iraq revealed a systemic failure of the non-proliferation regime: national intelligence failed to detect ongoing clandestine activity; national export-control policies largely failed to close down the possibility of exporting components that could contribute to a nuclear-weapons programme; and the safeguards system of the International Atomic Energy Agency (IAEA) was not only focused and implemented in such a way as to reduce the likelihood of detecting a range of unauthorized activities, but also lacked some of the capabilities necessary for dealing with clandestine activity.

Strengthening the effectiveness and credibility of IAEA safeguards and restoring international confidence in them are central concerns. The Iraqi imbroglio is the proximate cause for such an inquiry, but the inquiry is also dictated by the sea change in international relations. The domination of the inter-

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national political-security agenda by United States-Soviet relations also meant a diminished involvement of the two nuclear super-Powers in conflicts and a commensurate lessening of their capacity to exert an influence over the security policies of these countries. And it has meant higher priority on the international agenda for regional and even locally based conflicts and confrontations and an increase in the relevance of these situations to international stability and security.

A number of factors have led to increased risk of proliferation in the third world: the spread of technological knowledge, an increase in the sources of nuclear supply, the perception in some quarters that nuclear weapons can serve to bolster hegemonic ambitions, deter outside interference or compensate for the diminished role of the major nuclear States in providing security assurance.

The focus of concern is the possibility of clandestine programmes even more than diversion of nuclear material from nuclear fuel cycles dedicated to peaceful use. For States with relatively limited nuclear power reactor programmes, facing a substantial probability of the detection of diversion of nuclear material from declared peaceful activities, and having relatively modest nuclear military requirements, clandestine programmes seem to offer a preferred route to the acquisition of nuclear weapons. This in turn raises new questions and new challenges for traditional non-proliferation safeguards. These safeguards were largely predicated on the idea that States voluntarily undertaking solemn non-proliferation commitments were not significant risks as regards proliferation. Nevertheless, their peaceful commitments had to be effectively and independently verified. In fact, IAEA has approached its safeguards responsibilities on the assumption that the existence of clandestine facilities could not *a priori* be excluded, and that there existed a risk of non-compliance with undertakings.

## Expectations and Perceptions of Safeguards Prior to the Situation in Iraq

Until recently, IAEA safeguards enjoyed a substantial degree of confidence. Important political statements to this effect were made in the 1985 and 1990 Review Conferences of the non-proliferation Treaty. The Final Declaration of the 1985 Conference expressed:

> "the conviction that IAEA safeguards provide assurance that States are complying with their undertakings and assist States in demonstrating this compliance. They thereby promote confidence among States and . . . help to strengthen their collective security. IAEA safeguards play a key role in preventing the proliferation of nuclear weapons and other nuclear explosive devices."[1]

The draft final document of the 1990 Conference[2] reiterated these views, but added the recommendation that IAEA should study "the possible scope, application and procedures" of special inspections to deal with the contingency of States not fulfilling their non-proliferation commitments to place under safeguards all source or special fissionable materials, thus indicating an emerging concern about clandestine activity.

Supplier States have relied on an effective international safeguards system as a condition for doing international nuclear business. It is generally acknowledged that without safeguards there would be little if any international nuclear cooperation, but also that this would not mean an end to nuclear activity, only a sharply increased uncertainty about the nature of the nuclear activity that was going on and an inevitable rise in insecurity and instability resulting from the dynamics of the security dilemma.

On the other hand, it was largely understood in the beginning that safeguards were not panaceas and did have limitations, although thinking about this has tended to become blurred as the notion that safeguards do or should *prevent*

proliferation has taken hold. At the dawn of the nuclear age the Acheson-Lilienthal Report[3] concluded that "a system of inspection superimposed on an otherwise uncontrolled exploitation of atomic energy by national governments will not be an adequate safeguard", and that "systems of inspection cannot *by themselves* be made effective safeguards . . . to protect complying States against the hazards of violations and evasions." [Emphasis added. The words emphasized make clear that from the outset safeguards were seen as essential but not conclusive measures in foreclosing the risk of proliferation.] This formed the basis of the proposal in the Baruch Plan[4] that all nuclear activities that were potentially dangerous to world security be placed under the ownership and control of an international agency.

Rejection of the Baruch Plan was followed by a period of secrecy which, failing to forestall continued dispersion of nuclear knowledge and development, led to a policy of controlled nuclear cooperation spearheaded by the United States with its Atoms for Peace initiative. In this context, control meant the application of a system of international safeguards on nationally owned and operated nuclear programmes to verify that nuclear activity was not diverted from peaceful to military use. Safeguards were applied, as a condition of cooperation, on any equipment, plant or material that was provided. On-site inspection was made an integral part of this approach.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT),[5] which came into force in 1970, introduced the concept of comprehensive or full-scope safeguards, meaning that safeguards were to apply to all nuclear material in peaceful use in all non-nuclear-weapon States parties to the Treaty. Parties were required to declare *all* nuclear material in all peaceful nuclear activity. If all nuclear material subject to safeguards could be accounted for through IAEA inspection, it could be concluded that there was no reason to suspect any diversion from peaceful to proscribed uses. It is this system,

based on material accountancy and the auditing of records and reports through on-site inspections involving independent verification, that has been the mainstay of non-proliferation verification. It is probable that the notion that safeguards prevent proliferation derived from this linkage.

Although IAEA safeguards under the non-proliferation Treaty generate the confidence described in the final declarations or documents of NPT Review Conferences, there have also been some questions and concerns about them. India's nuclear test in 1974 not only dramatized the fact that the technical capability to design and fabricate nuclear explosives successfully was spreading, but also raised the question of the adequacy of safeguards for dealing with separated plutonium. Although measures were taken through national policies and multilateral understandings, such as the Nuclear Supplier Guidelines, to minimize the opportunity for the spread of reprocessing capabilities that would lead to plutonium stockpiles under national control, there has been, since the mid-1970s, a continuing debate concerning the adequacy of safeguards of any kind in dealing with plutonium. A vocal segment of the interested public contends not only that separated plutonium cannot be safeguarded, but that in large-scale nuclear facilities such as reprocessing plants, material accountancy, even accompanied by containment and surveillance, cannot detect the diversion of quantities of material large enough to make one or more nuclear weapons and that plutonium separation should therefore be banned. It must be noted, however, that IAEA has demonstrated considerable, if not infallible, capabilities for dealing with reprocessing facilities. What it cannot do is assure that a Government will not suddenly alter its peaceful-use-only policy and seize nuclear material for proscribed military use.

At the heart of the 1981 Israeli attack on the Iraqi research reactor, Osirak, lay the concern that, however accurately international safeguards may account for nuclear mate-

rial at a given time, they cannot anticipate or control future conduct. As expressed by a senior member of the Israeli nuclear establishment, "The mechanism of safeguards is good and reasonable as long as it is respected. The problem is that it can be abrogated unilaterally." It should be recalled that under article X of the non-proliferation Treaty a State has the right to withdraw from Treaty commitments when its supreme national interests have been jeopardized, although it is required to provide justification and three months' notice, thus giving the international community time to address the alleged reasons and to make an effort to accommodate them. At a minimum, this means that, to be legitimate, withdrawal cannot be frivolous. While withdrawal would not release the State from obligations it had undertaken bilaterally to suppliers regarding the use of nuclear material or facilities they had provided, it would release it from its obligations with respect to indigenous nuclear assets.

Other limitations or constraints on international safeguards have shown up in operational experience. Some are more important than others, but all affect either how the system is perceived or how efficiently it is implemented. In normal circumstances involving routine inspections, there are limits on the access rights of inspectors, on where they can go, as well as on the frequency and intensity of inspection effort. The document underlying the NPT full-scope safeguards system was drafted to provide the secretariat with flexibility in negotiating safeguards agreements, but the politics of the situation have led to restrictive rather than liberal interpretations, in individual agreements, of what IAEA can do. This does not mean that safeguards cannot be effective, but it does impose de facto limits on the implementing of safeguards agreements.

States have the right to accept or reject inspectors proposed to them by the Agency. Some States will not accept as inspectors nationals of States which are not parties to the

NPT, or with whom they do not have diplomatic relations, or persons who do not speak the native language. This has an impact on the efficient use of staff. Other States set limits on the number of inspectors that can be designated for assignment to them, again affecting the optimal distribution of personnel. Only a few States have waived visa requirements for inspectors, and this has meant curtailment of the opportunity to conduct unannounced inspections.

Nevertheless, at the last two Review Conferences the parties to the NPT strongly affirmed the credibility of the IAEA safeguards system and their confidence in it. Safeguards have, by and large, done what was expected of them *with regard to declared nuclear material*. It has been understood that they are evolutionary in nature, that actual experience is their ultimate testing-ground, and that adjustment, adaptation and change are inevitable features of safeguards. The political judgement was that the system provided the necessary confidence that nuclear activities under safeguards were being used only for peaceful purposes, the limitations and problems noted above notwithstanding. It is the judgement of political authority that ultimately determines the fate of international arrangements.

### Effect of the Iraqi Situation on Safeguards

The Iraqi situation and the discoveries made by the IAEA-UNSCOM (IAEA/United Nations Special Commission) inspection teams have had negative and positive effects on the safeguards system. On the negative side they showed that even ratification of the NPT and acceptance of full-scope safeguards were not a guarantee against clandestine nuclear activity; and they brought to light the fact that the IAEA safeguards system, keyed as it was to declared nuclear material, could not, as matters stood, provide assurances that undeclared nuclear materials or plants did not exist in States under NPT safeguards. In this respect the revelations under-

mined confidence in the regime and the safeguards system. Put simply, the nature of the threat or risk to be protected against had changed and so did the expectations. The existing system, as practised at present, could not meet those expectations and provide that degree of confidence.

On the positive side, however, the very fact of undermining confidence has resulted in more sustained and higher-level political attention to non-proliferation and safeguards than has been evident for a long time, and in more concentration on improving both non-proliferation and the verification system. Governments wish to ensure that the contribution the regime has made to stability and security can be perpetuated, and to that end are exploring not only what new authority might be needed, but how their own past policies and behaviour might have contributed to the limitations of the present system and how that could be changed.

Iraq was the first case of deliberate and substantial cheating on the NPT and safeguards obligations in the more than two decades they have been in place. Until then there had been no situation indicating the presence of undeclared facilities in a country subject to full-scope safeguards, no known case of deliberate failure by a State to report a facility it was obliged to report, and no confirmed diversion of nuclear material. The inability of the current system to cover all contingencies did not nullify the effectiveness of the current system for the situations it was designed to address. As discussed earlier, this comes at a time when international political change more generally dictates the need for assessing what would be required to sustain non-proliferation in the post-cold-war world.

One of the most significant effects of the Iraq experience is that it has shifted emphasis with respect to assessing the confidence that safeguards provide. Before the violations by Iraq, the question was how adequately IAEA was carrying out its assigned responsibility of verifying that all material in

all peaceful activity under safeguards could be accounted for and to what extent it provided confidence that the activities submitted to safeguards were being used for peaceful purposes only. Because of the discoveries made, pursuant to United Nations Security Council resolution 687 (1991), of an extensive clandestine nuclear programme in an NPT State, concern is now focused on ensuring that countries are not secretly engaged in nuclear-weapons development.

The question now is therefore whether the safeguards system provides the necessary confidence that no unauthorized activities are under way and no undeclared facilities or material are present in a safeguarded country. The first part of this concern is a broader question than that for which IAEA was assigned safeguards responsibility under the NPT. While, in its article II, the NPT requires all non-nuclear-weapon States parties not to "receive the transfer . . . of nuclear weapons or other nuclear explosive devices or of control over such weapons . . . ; not to manufacture or otherwise acquire nuclear weapons . . . ; and not to seek or receive any assistance in the manufacture of nuclear weapons . . .", the Agency was charged—in article III, paragraph 1—only with verification of obligations assumed under the Treaty "with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices". This is not to say that IAEA could not be called upon to verify other NPT obligations, but that the specific mandate relates only to the use of nuclear material subject to safeguards. How even this responsibility is implemented, however, could uncover evidence of the pursuit of alternative paths to nuclear weapons, and to this extent the Agency could contribute to bringing the existence of such activities to public attention.

There are really two issues here. One is whether the actual scope of safeguards responsibility could (or should) be expanded beyond verification of the end-use of nuclear materials and facilities to cover other routes to nuclear weapons.

That question lies beyond our present purpose. The other issue is the extent to which changes in the implementation of safeguards under existing authority can contribute to meeting the new expectations. Three points are relevant here. First, it is clear that inspection of declared nuclear materials and facilities only is not enough to verify compliance with non-proliferation pledges, and that the system needs to be oriented also towards the problem of undeclared nuclear activity. Secondly, the emphasis in the present system on material accountability places a premium on quantitative measures, sometimes at the expense of other more qualitative attributes of safeguards such as observation of activities at or around a safeguarded site. Thirdly, the proliferation risk is not proportional to the size of a nuclear programme. In fact, if one considers the three or four largest and most advanced nuclear programmes and the three or four highest-risk States in the NPT regime, there would if anything seem to be an inverse relationship between size and risk. This is obviously a matter of political judgement, but it is inescapable that where States are located (for example, in stable or volatile regions) and the character of their nuclear activities (such as large research reactors or sensitive fuel-cycle facilities in a programme lacking any nuclear-power projects) have some bearing on how the risk of proliferation may be judged.

The case of Iraq is relevant to all of these points: it involved extensive undeclared nuclear activity leading to the only two condemnations of safeguards violations ever issued by the Board of Governors of IAEA; the focus on material balance diverted the attention of Agency inspectors from significant nuclear activity in the vicinity of the safeguarded facilities; and the continued interest of Iraq in reconstructing Osirak as well as considerable reporting of attempted imports of equipment and components that made sense only if nuclear weapons were an end goal were never treated as a basis for closer inquiry.

The Iraqi situation also underscored the problems that arise from defining the frequency of inspection by the quantity of nuclear material in each facility as distinguished from the quantity in the country as a whole. A country basis for inspection frequency in the case of Iraq would have led to monthly instead of semi-annual on-site inspections and could well have resulted in detecting the diversion of a quantitatively very small, but symbolically very important, amount of nuclear material at its safeguarded reactor. It could have eliminated the possibility of successful diversion at the site. In the same vein, Iraq raises questions about the advisability of the Agency's continuing to use the values for significant quantities of nuclear materials that it does (for example, 8 kg plutonium, 25 kg highly enriched uranium), since they are relevant to frequency of inspection. Lowered values could increase inspection frequency in all safeguarded States under the present regime and thereby reduce the chance that a country with a partially clandestine fuel cycle (for example, a hidden reprocessing plant that depended for feed on a safeguarded research or power reactor) might be able to divert nuclear material without being detected. Lesser values would have resulted in more frequent inspections of the small Iraqi research facility.

## Where Do We Go from Here?

In considering the steps that might be taken to extend existing confidence in safeguards with respect to declared nuclear material to undeclared activities and related problems, it is essential to keep in mind that they are only one element, albeit a critical one, of a broader non-proliferation regime. Safeguards are not panaceas. They cannot prevent proliferation by a determined State, but they can provide the international community with early warning of the risk of proliferation and, fully implemented, they can play an important deterrent role or at the very least complicate the life of a

would-be proliferator and increase the probability of detecting anomalous events that might suggest the possibility of illicit activity.

Since the exposure of Iraq's non-proliferation and safeguards violations, many suggestions have been made as to what to do about verifying non-proliferation. These range from abandoning IAEA in favour of some as yet undefined alternative organization, to adding to the Agency's authority through amendment of underlying NPT and equivalent conventions and of the safeguards system, to focusing on existing authority and taking appropriate steps to ensure its full implementation. This last approach, at least as a first step, has the merit of avoiding the need to negotiate new agreements or to modify existing ones. There is also reason to believe that it can carry the system reasonably far towards meeting public concerns about clandestine nuclear activity in safeguarded States. This does not rule out the possible need for additions to existing authority, as was done, for example, by the mandate assigned to IAEA under Security Council resolution 687 (1991).

Rather than listing and discussing the range of proposals already in the public domain for strengthening existing IAEA safeguards authority, it is proposed to focus on two themes: transparency and political will.

*Transparency.* In the idiom of IAEA safeguards, transparency usually refers to the system and its results. It can refer also to the transparency of the activities being inspected. Both uses apply here. Transparency is extremely important to safeguards credibility. The safeguards document relating to the NPT, IAEA information circular INFCIRC/153,[6] was drafted with the advanced industrial States primarily in mind. These States were keenly sensitive to any further discrimination beyond that already imposed by the NPT division of nuclear-weapon and non-nuclear-weapon States, and the obligation of the latter to accept safeguards on all nuclear activity.

The many provisions in the safeguards document regarding limiting intrusion on sovereignty, protecting commercial and proprietary interests, and specifying the obligations of the Agency and its inspectorate reflect the sensitivity of the participating weapons States to these concerns. Many of these States have been equally sensitive about publishing the results of the secretariat's annual Safeguards Implementation Report, which reviews accomplishments and problems experienced in implementing safeguards and draws conclusions with respect to the diversion or non-diversion of nuclear material. Many of these States have also emphasized the service aspect of safeguards, and have rejected the notion that safeguards somehow serve to deter them from doing what they have in good faith forsworn in signing the NPT.

But safeguards are not just a service to the State wishing to demonstrate its bona fides; they are also a service to other States that seek credible and convincing evidence that their safeguarded neighbours are indeed living up to their non-proliferation undertakings and engaging in exclusively peaceful uses of nuclear energy. They know not to take declarations of benign intent by non-NPT neighbours for granted, but they want independent verification of the fulfilment by NPT neighbours of their pledges. The more transparency there is to this process and to the nuclear activities of full-scope safeguards States, the more credible the affirmations of peaceful intent become. Therefore, the more transparency the better. However, one must understand the need for some balance between transparency, on the one hand, and legitimate commercial, industrial and proprietary concerns of the non-nuclear-weapon States parties, on the other. There is no inherent reason why a reasonable balance cannot be achieved.

What does transparency involve? Four key elements may be mentioned, although there are others.

—*One* is as full and open a book on the nuclear fuel cycle in the safeguarded country as possible. This means that States

will voluntarily release even information on their nuclear activities that is not required if that information can help to dispel suspicions.

—A *second* is adoption of a system of reporting all transactions involving nuclear material (already required for NPT parties and adopted as a matter of policy by some non-parties, such as Argentina) and plants, equipment or components that can be used for nuclear purposes (not required for transactions between NPT parties because of the focus of safeguards on nuclear material and the assumption that any facility that has any nuclear material in it will automatically be under safeguards).

—A *third* is acceptance of a liberal implementation of rights of access by verification authorities even beyond agreed key measurement points, if such access would serve to circumvent the need for the Agency to pursue procedures related to anomalies in order to reach a conclusion on the accountability of nuclear material under safeguards. This would exceed any routine inspection rights that IAEA now has, effectively broaden the concept of routine inspection, and reinstate rights that the Agency may have agreed to curtail in negotiating the subsidiary arrangements which activate safeguards agreements.

—The *fourth* is adoption of a reporting system that publicizes the findings of verification activities country by country. This could be troublesome in that, often, inspection activities are in some respects incomplete or the results contain certain ambiguities, either or both of which could be construed as reason for suspicion when the facts are completely otherwise. However, the principle of open reporting of results in some manner would seem to be in the interest of the credibility of the safeguards system, especially if the other measures for transparency that have been mentioned were adopted.

Certain measures already under active consideration or discussion in IAEA either support or implement the notion of

transparency. Three deserve mention here: design notification procedures, universal reporting and special inspections.

States accepting full-scope safeguards are obliged to provide the Agency with *design information* for any nuclear facilities "as early as possible before nuclear material is introduced" (INFCIRC/153, para. 42). The practice evolved of interpreting this to mean no less than 180 days before material is introduced. It is clear that unreported construction of nuclear facilities raises concern and suspicion when learned of by other States and that notification from no later than the time that construction begins is important. The Director General has already recommended to the Board of Governors the adoption of new time-lines for notification and their formal incorporation in subsidiary arrangements to safeguards agreements, thereby providing a legal basis for the obligation. Among other things, although not technically involving an inspection, this would enable Agency inspectors to visit construction sites periodically. This could be further strengthened if supplier States would require that any facilities, equipment or components provided to *any* State be notified to IAEA and submitted to Agency safeguards. This is not currently required under the NPT safeguards system; and safeguards can, of course, be applied only where there exists an underlying obligation. Requirements by supplier States would provide that basis.

There is now a strong interest in encouraging a system of *universal reporting* of all exports of nuclear material even when it is destined for non-nuclear purposes. Non-nuclear-weapon States parties to the NPT are required to report exports of nuclear material unless it is to a nuclear-weapon State. Subject to certain exceptions, nuclear-weapon States are under a similar obligation with respect to exports to non-nuclear-weapon States, while States without safeguards agreements have no legal obligation to report nuclear exports. Universal reporting would obviously support the principle of

transparency discussed above. As mentioned in discussing design information, obligatory reporting of exports of any nuclear-related items could be considered and placed on the agenda for strengthening non-proliferation and international safeguards.

*Special inspections* have received considerable attention in both official and non-official circles and are the subject of a paper communicated to the Board of Governors by the Director General of IAEA. The right of special inspection already exists but has been used almost exclusively to clarify situations arising from routine inspection where, despite discussion and investigation, certain questions remained unresolved. They have never been carried out at locations other than those under safeguards. However, exercise of the right to investigate the possibility of undeclared nuclear material and to call for inspection at undeclared locations is now widely regarded as an important means of implementing non-proliferation safeguards. It is instructive to note that the IAEA Statute provides for access at all times to all places, data and persons involving material, equipment or facilities required to be safeguarded,[7] but that this sweeping authority was quickly circumscribed as States were unprepared to accept the implications such rights would have for national sovereignty. The case of Iraq has given rise to second thoughts, and more extensive use of this right is now seen as a critical feature of credible international safeguards. The conditions for effective use of this right have been spelt out by Hans Blix, Director General of IAEA: access to information indicating the existence and location of clandestine activity, access to suspected sites that are identified, and support by the United Nations Security Council of this access.

Effective use of existing safeguards-derived and other readily available information may suffice to establish a basis for calling for a special inspection, but in some cases information from outside sources, including national intelligence,

may be required, and it is this additional information to which the Director General referred. As the Agency is not a police or military body, it cannot force its way into a State. It must be admitted voluntarily. Assured access is an obligation of States under safeguards, however, and their failure to comply with their obligation is a violation subject to actions built into the IAEA system, namely reporting non-compliance to the United Nations for appropriate action. Security Council support speaks for itself. But a Security Council resolution declaring that violations of NPT and international safeguards undertakings would be considered *ipso facto* a threat to international peace and security could provide a powerful deterrent to violations and could induce compliant behaviour on the part of a State. This would be all the more effective if the Security Council and leading Powers of the world were to be constructively responsive to the legitimate security concerns of States that might otherwise be induced to seek their security in nuclear arms.

*Political will.* Political will is essential to the success of non-proliferation and to the effective implementation of international safeguards. International organizations are creatures of their client sovereign States, not independent political entities with political constituencies independent of their State members upon whom they can call for the support necessary for their effective operation. If the States of the international system want a strong non-proliferation regime and credible verification in which they can place confidence, they must provide the international secretariats to which they assign responsibilities with the necessary authority, resources and political support.

There are three relevant elements for successful implementation of a regime such as that of non-proliferation: expectation, authority and resources.

When authority and resources are in synchronous relation with expectations, the system can work; if they are not,

problems arise. Public expectation tended to exceed the authority and certainly the resources made available to IAEA for carrying out its safeguards responsibilities when it came to the question of clandestine nuclear activity and the preventing of nuclear proliferation.

It is a political call for the States in the new world order to decide whether or not they want, and are prepared, to pay the political, financial and related costs of a credible safeguards system. Such a system must go further than the present one in mapping, publicizing and verifying the nuclear activities of participating States, a system in which they can place sufficient trust and confidence to allow it to serve as a basis for planning their own security policies.

Today's system meets some, but not all, of these requirements. Whether this can be fully achieved is open to question, for it involves many parameters not discussed here. What is certain is that the worst possible outcome would be to allow expectations to reach beyond the authority and resources the international community is prepared to give.

**Notes**

1 *Final Document of the Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Part I* (Geneva, 1985) (NPT/CONF.III/64/I), annex I, para. 2.

2 Draft final document of the Fourth Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 1990 (NPT/CONF.IV/DC/L.1/Rev.1 and Add.1 and Add. 2/Rev.1).

3 "A Report on the International Control of Atomic Energy", prepared for the Secretary of State's Committee on Atomic Energy (Acheson-Lilienthal Report), reproduced in part in *Nuclear Safeguards: A Reader* (Library of Congress).

4 "The Baruch Plan: Statement by the United States Representative (Baruch) to the United Nations Atomic Energy Commission, June 14, 1946" in *Documents on Disarmament, 1945-1959*, Pub. No. 7008, 2 vols. (Washington D.C., U.S. Government Printing Office, 1960), vol. I.

5 The text of the Treaty is reproduced in *Status of Multilateral Arms Regulation and Disarmament Agreements*, 3rd edition: 1987 (United

Nations publication, Sales No. E.88.IX.5 and corrigendum), pp. 71 ff.

6 The IAEA model NPT safeguard agreement of 1971 (Information Circular INFCIRC/153), "The structure and content of agreements between the Agency and States required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons".

7 *Statute of the International Atomic Energy Agency*, art. XII, A, para. 6.

# Destroying Chemical Weapons

## The Destruction, Removal or Rendering Harmless of Iraq's Chemical Warfare Capability

John Gee

### Introduction

At the beginning of 1991 it was widely believed that Iraq possessed a formidable and sophisticated capability to wage chemical warfare. Reports in the international media over many years had documented both Iraq's extensive chemical weapons production capabilities and the role foreign suppliers of both equipment and chemicals play in establishing those capabilities. Moreover, despite being a party of long standing to the 1925 Geneva Protocol,[1] which prohibits the use of chemical weapons in war, Iraq had shown no hesitation about using chemical weapons: reports in the international media of Iraqi use of chemical weapons against the Kurds in the 1970s were followed, late in 1983, by Iranian complaints to the Secretary-General of the United Nations that Iraq was using chemical weapons against Iranian forces. As a result of investigations carried out by the United Nations over the period 1984 to 1988 and of the continuing interest of the international community in the subject, Iraq's extensive use

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of chemical weapons in the Iran-Iraq war is by now well documented.[2]

Faced with this situation and the widespread belief that the use of chemical weapons against the Coalition's ground forces was highly probable, Coalition planners placed a high priority on targeting Iraq's chemical warfare assets when Operation Desert Storm commenced on 16 January 1991. These assets were targeted from the outset of the campaign, and the extensive air strikes against the facilities and storage depots known, or suspected, to have been associated with Iraq's chemical warfare programme over the six-week period from the middle of January to the end of February 1991 inflicted considerable damage on them.

The formal end to the hostilities in the Gulf War came with Iraq's grudging acceptance, on 5 April 1991, of Security Council resolution 687 (1991) of 3 April. This resolution placed a number of obligations on Iraq, including, in section C of the resolution, the obligation to accept the elimination of its weapons of mass destruction, that is, its chemical and biological weapons and its ballistic missiles, and to forswear the acquisition or use of such weapons in the future.

Oversight of the elimination of Iraq's chemical and biological weapons and its ballistic missiles was entrusted to a Special Commission (UNSCOM) established specifically for this purpose. The Special Commission was also empowered by resolution 687 (1991) to conduct immediate on-site inspections in Iraq based on Iraq's declarations and the designation of additional locations by the Special Commission itself.

In the area of chemical weapons, Iraq was required:

a To accept unconditionally the destruction, removal or rendering harmless under international supervision of its chemical weapons and all stocks of agents and all related subsystems and components and all research, development, support and manufacturing facilities;

b To submit to the Secretary General within 15 days a declaration of the locations, amounts and types of all items specified above;

c To yield to the United Nations Special Commission possession of all the above-mentioned items for destruction, removal or rendering harmless, taking into account the requirements of public safety; and

d To undertake not to use, develop, construct or acquire any of the items listed above.

Iraq was also invited to reaffirm its obligations under the 1925 Geneva Protocol, which it did in its letter of 11 April accepting the terms of the resolution.

## Iraq's Chemical Warfare Capabilities: The Size of the Task

Iraq's initial declaration of its chemical weapons (CW) capabilities made on 18 April to the Secretary-General was quite inadequate. After much further probing by the Special Commission, a more detailed picture emerged, and the Executive Chairman of the Special Commission announced on 30 July that the total number of chemical-filled munitions declared by Iraq to the Special Commission was at that stage some 46,000, or over four times the amount in the original declaration of 18 April to the Secretary-General.[3]

Of the 46,000 chemical-filled munitions, some 20,000 are 120-mm CS-filled bombs, which the Special Commission has confirmed were destroyed by the Coalition bombing, as notified by Iraq. The remaining munitions comprise some 14,400 munitions filled with mustard agent (12,634 155-mm artillery shells and 1,775 aerial bombs of various types), and 11,000 munitions filled with sarin (10,780 122-mm rockets,[4] 200 aerial bombs and 16 Al Hussein ballistic-missile warheads)[5] and binary agent (336 aerial bombs and 14 Al Hussein ballistic missile warheads).[6] Many of these were damaged or destroyed as a result of the Coalition bombing.

The amounts found by the Special Commission's inspection teams tallied closely with the Iraqi declarations. Further details on this aspect and a fuller description of the munitions are given in annex I.

In addition Iraq declared more than 350 tonnes of bulk chemical agent, said to compose mustard (280 tonnes were declared but only 205 tonnes were found by the Special Commission), sarin (75 tonnes declared, 78 tonnes found) and some "spoilt" tabun (quantity not declared, but subsequently found by the Special Commission to be around 50 tonnes), all stored at the Al Muthanna site.

The detailed survey of the Al Muthanna site carried out by the Special Commission's fifth CW inspection team (UNSCOM 17) in October-November indicated the presence on site, in addition to the agents GA, GB, GF and the GB/GF mixture, of small research-scale quantities of the agents s-butyl sarin, n-butyl sarin and ethyl sarin (GE).[7] UNSCOM 17 also found small amounts of compounds that might be expected from the decomposition of VX consistent with the oral advice of Iraqi officials to the first and second CW inspection teams (UNSCOM 2 and UNSCOM 9) that it had been made in laboratory quantities only. Thus it is clear that Iraq has made a wide variety of CW agents, not all of them declared to the Special Commission.

UNSCOM 11, the third of the Special Commission's CW inspection teams, found 6,400 empty aluminium liners for 122-mm sarin rockets and some CS-filled hand grenades which should have been declared to the Special Commission but were not. Other inspection teams have found small numbers of bomb casings and the like which also should have been declared but were not. In all other respects, however, the findings of the Special Commission's CW inspection teams have been broadly consistent with the Iraqi declarations.

The total quantities of chemical-filled munitions, stocks of bulk agent and precursor chemicals declared by Iraq to the Special Commission are as follows:

| | |
|---|---|
| Chemical-filled munitions | 45,755 |
| Empty munitions | 78,675 |
| Tonnes of bulk agent | 355 |
| Tonnes of precursors (annex II) | 3,173[8] |

The amounts discovered in the course of the Special Commission's inspections agree for the most part, but differ in two significant respects: the declaration for the mustard agent (see above) and the declaration for the precursor phosphorus trichloride (see annex II for details).

The amount of chemicals in the munitions is not known exactly, but on the basis of the Iraqi declarations and taking into account the findings of the Special Commission's inspection teams, should be around 200 tonnes. The Special Commission is therefore faced, overall, with the task of ensuring the destruction, removing or rendering harmless of some 134,500 munition casings, 550 tonnes of chemical agent and 3,200 tonnes of precursor chemicals. This is not a large amount when compared with the stockpiles currently held by the United States and the former Soviet Union, but it is a very considerable stockpile for a developing country. The destruction of these assets will be a formidable task for a body with the limited resources of the Special Commission.

Facilities which are also covered under resolution 687 (1991) and which therefore come to the attention of the Special Commission are the Al Muthanna State Establishment, Iraq's declared chemical warfare production establishment, and the production facilities contained therein, and any other undeclared production facilities that may come to the attention of the Special Commission in the light of its inspection activities in Iraq.[9]

## The Special Commission's Approach

From the outset, the Special Commission addressed the conceptual basis for the destruction of Iraq's chemical warfare agents and precursor chemicals. Following the first meeting

of the Special Commission's Chemical and Biological Weapons (CBW) Working Group, held in New York from 6 to 17 May, the following decisions were taken:

a The preferred method of destruction of chemical warfare agents would be incineration, although other processes such as chemical degradation by caustic hydrolysis were not ruled out;

b In accordance with the provisions of the draft chemical weapons convention currently being negotiated in the Conference on Disarmament in Geneva (the so-called "rolling text"), methods of disposal which had been used in the past, such as land burial, dumping at sea and open-pit burning, were categorically rejected;

c The destruction process would take place in Iraq;[10]

d Wherever practicable, chemical munitions at locations in Iraq would be taken to one central point in Iraq for destruction, rather than destroyed *in situ*. This central destruction point would be the Al Muthanna State Establishment, unless it was found on inspection to be unsuitable for this purpose;

e One of the tasks of the first CW inspection, to take place early in June, would be to assess the suitability of the Al Muthanna site for the destruction process;

f Those munitions that are too dangerous to be moved would have to be destroyed *in situ*, including, where necessary, by explosive demolition.

At the time of the first meeting of the Working Group, the Special Commission was unaware of the existence of the 20,000 CS-filled mortar rounds, as it did not receive this information until late in May. At its next meeting, late in June, the Working Group decided that, despite the uncertain designation of riot control agents (RCAs) as chemical warfare agents, the mortar rounds should fall within the Special Commission's mandate. The reasons were twofold: first, Iraq had declared them to the Special Commission as part of its chemical weapons stockpile pursuant to resolution 687 (1991);

secondly, the quantity and type of munition declared indicated that their likely intended use by Iraq went well beyond mere riot control.

To provide expert advice on the complex web of technical issues which the destruction of chemical weapons presented, the Special Commission established a Destruction Advisory Panel comprising experts on the destruction of chemical warfare agents from Canada, France, the Soviet Union, the United Kingdom and the United States, together with a representative of the World Health Organization. The Panel met for the first time concurrently with the CBW Working Group late in June. It has now met three times and some of its members have also visited Iraq for detailed discussions with Iraqi officials on the technical aspects of the proposed destruction processes.

The destruction of chemical weapons carried out elsewhere in recent years indicates that it can become an extremely lengthy and expensive process.[11] In carrying out the directive of the Security Council, the Special Commission is very conscious of the link between section C of resolution 687 (1991) and paragraph 22 of the resolution, that is, the link between the elimination of Iraq's weapons of mass destruction—including, of course, its chemical weapons—and the current ban on the export of oil and other commodities produced in Iraq. This nexus clearly indicates the need for the Special Commission to proceed as quickly as possible with the destruction process, taking account, of course, of public safety as required by the resolution.

### Initial Contacts with Iraq

On 9 June 1991 Iraq proposed to the Security Council that it should carry out the destruction of its chemical weapons in accordance with procedures to be agreed by, and under the control of, the Special Commission's technical experts. This proposal by Iraq has formed the basis of the Special Commis-

sion's approach to the subject of destruction, and there have been intensive exchanges at the technical level between the Commission and Iraq on this subject.

The first set of technical discussions with the Iraqi experts took place in mid-August. It soon became apparent that the experts had already had considerable experience in the emptying of chemical weapons munitions and the destruction of CW agents; this skill was attained at the end of the Iran-Iraq war when Iraq decided to dispose of munitions which either had gone beyond their normal shelf-life or were leaking. The munitions involved were 155-mm artillery shells and 122-mm rockets. The nerve agent was destroyed by caustic hydrolysis and the mustard by suspension in a solution of calcium hypochlorite (bleach).

The Iraqi experts also indicated that they had approximately 200 civilian staff available for the destruction activities, all of whom had been fully trained in the wearing of impermeable protective clothing and respirators and had had previous experience in working with CW agents. The Special Commission has therefore decided to use Iraqi personnel to the greatest extent possible consistent with the directives of resolution 687 (1991), although the utility of bringing in outside contractors or officials from other Governments to assist or even carry out the destruction is also being examined.

### Destruction Activities

From an operational perspective, it is convenient to think of the destruction of Iraq's chemical munitions as occurring in the following stages:

a Disposal of the declared empty munition casings;

b Once the Iraqi declarations to the Special Commission have been verified, transfer of those munitions that are capable of being moved from the declared storage sites to the Al Muthanna site;

c Drilling of the filled chemical munitions, draining of

the agent contained therein and storage of it in bulk prior to its destruction;

d Destruction of the drained munitions casings;

e Destruction on site of the bulk agent and the intermediates intended for use in the manufacture of chemical weapons (see annex II).

It is not necessary, of course, for all of these processes to be carried out in sequence, nor is it necessary to await the end of the verification phase of the inspection process in order to commence. Indeed, the destruction process has already begun with the visit of the fourth of the Special Commission's inspection teams to the Al Muthanna site at the beginning of September. That inspection team directed the destruction, by Iraqi personnel, of all unfilled chemical munitions stored at the Al Muthanna site and reconnoitred, selected, and showed to Iraqi officials the locations at Al Muthanna for the collection and storage of bulk agents, chemical munitions and intermediate precursor and other CW-related chemicals and the location for the future destruction operations of chemicals at the site.

In the course of the destruction operations carried out on that occasion, a total of 8,157 unfilled munitions, consisting of six different varieties of bombs, 155-mm artillery shells and 122-mm rockets were destroyed either by crushing with a bulldozer or by cutting up with oxyacetylene torches. Early in October, parts of chemical munitions and 3,672 122-mm rocket warheads were also destroyed. These were the bulk of the unfilled CW munitions at the Al Muthanna site.

At the same time as this process was taking place, the Iraqi authorities were informed that they could commence the transfer of those munitions that could be safely moved from the declared storage sites at various locations in Iraq to the Al Muthanna site. These transfers took place only after the munitions at each location had been inspected by the Special Commission's inspection teams, and they were carried out

under procedures laid down by the Special Commission. This process was begun early in September and was virtually completed by mid-November. Those munitions that could not be moved safely will be destroyed *in situ*, probably by explosive demolition.

With the completion of the detailed survey of the Al Muthanna site by the Special Commission's fifth CW inspection team on 9 November, the Iraqi authorities were then instructed to clean up the site in preparation for the next destruction activities. The first of the Special Commission's CW inspection teams, which visited the site in mid-June, found that:

> "Conditions in many areas of the site are hazardous in the extreme. Most major structures on the site have either been totally destroyed or severely damaged as a result of the bombing during the hostilities: few buildings have escaped unscathed. While much unexploded ordnance has been removed, some still remains on the site. The site also contains leaking chemical munitions and the presence of chemical agent was detected in some areas and structures."

It concluded that:

> "There is a clear need to clean up the site and to commence the destruction process as quickly as possible, bearing in mind the requirement for public safety and the safety of the personnel involved."[12]

In September, a worker at the Al Muthanna site was exposed to nerve agent when a supposedly unfilled 122-mm rocket warhead burst. After a few days in hospital he recovered, but the incident serves as a reminder that the site is an extremely hazardous one and that the destruction process is a protracted and dangerous undertaking.

This clean-up process is now well under way. A particular problem in this respect has been the 6,120 sarin-filled 122-mm rockets stored at Al Muthanna, all of which, as noted

above, are leaking. As a temporary expedient pending a final decision on the destruction process to be used for the sarin, the warheads have now been separated from their rocket motors and stored in wooden boxes lined with wood shavings and charcoal at a site designated by the Special Commission downwind of the Al Muthanna site.

The Special Commission has decided that the Iraqi stocks of mustard agent will be destroyed by incineration, as recommended by the CBW Working Group at its first meeting. Deciding on a method for the destruction of the sarin nerve agent has been a difficult and lengthy process for the Special Commission. In its original offer of 9 June 1991 to the Security Council, Iraq proposed neutralization of the nerve agent by caustic hydrolysis, a method by which, as noted above, Iraqi technical experts later told the Commission in mid-August, they had destroyed nerve-agent stocks at the end of the Iran-Iraq war. The Commission initially had reservations about the Iraqi proposal on the following grounds:

a The United States had encountered problems in the past when it had attempted to destroy the nerve agent GB by caustic hydrolysis;

b While the hydrolysis of GB was well understood, the hydrolysis of a GB/GF mixture was not understood at all: to the best knowledge of the Special Commission's experts it had never been studied. The problem was compounded by the fact that, in this case, the GB/GF mixture had degraded and thus there were also a large number of degradation products present in the bulk agent. It was also very likely that the presence of GF and the degradation products would cause the hydrolysis mixture to be a two-phase system;

c The ability of the Iraqi engineers to carry out the proposed destruction process, taking into account the requirement for public safety, was not at that stage known to the Commission.

When these issues were discussed at the first meeting of experts in Iraq in mid-August, the Iraqi side requested permission to conduct test runs of their proposed destruction processes at two undamaged pilot plants on the Al Muthanna site. A detailed survey of these plants was carried out by the second CW inspection team on 21 and 22 August, and following further technical exchanges and the provision of detailed plans by Iraq for the planned neutralization process, Iraq was given permission to modify the pilot plant appropriately and to carry out test runs using the precursor D4 as a simulant. These test runs were carried out late in November, the final test run being witnessed by members of the Special Commission.

As with mustard agent, alternative options for the destruction of nerve agents which do not use Iraqi technology and resources are also being examined; a final decision on who will carry out the destruction of the nerve agent has not yet been taken.

The ultimate cost of the destruction process is not known at this stage, but it is likely to be considerable whatever options are chosen. The Special Commission's Executive Chairman has also indicated that the destruction will not be completed before mid-1993.

### Disposal of the Precursor Chemicals

It was made clear to Iraq that the intermediates D4 and thiodiglycol would be destroyed. The thiodiglycol will be destroyed by incineration and the D4 by chemical neutralization. As to the other precursor chemicals—thionyl chloride, phosphorus trichloride, phosphorus oxychloride and hydrogen fluoride—the Special Commission is prepared to consider, to the extent possible, dealing with these by permitting them to be removed from Iraq. A major consideration underlying this approach was the realization that destruction of these precursors in the quantities present in Iraq by either

incineration or hydrolysis would be a hazardous, lengthy and costly process, giving rise to significant safety and environmental issues; and that removal had much to commend it from the safety, timeliness, economic and environmental aspects. Iraq would of course be required to yield title to these chemicals. On the other hand, Iraq has requested permission to retain a number of these chemicals in the country for legitimate civilian use under the control of the Special Commission. The Commission is considering this request.

### Elimination of Other Elements of Iraq's Chemical Warfare Capabilities

In addition to chemical weapons and precursor chemicals, resolution 687 (1991) requires the destruction, removal or rendering harmless of all research, development, support and manufacturing facilities. This is taken of course to embrace not only the facilities themselves but equipment contained in them. The report by the Executive Chairman of the Special Commission on the first six months of the Special Commission's activities notes that:

> "Decisions will have to be taken on a number of dual-use items that have been used or were acquired in order to be used in the prohibited areas. A balance must be found between the requirements of resolution 687 (1991) to destroy, remove or render harmless all such items, on the one hand, and requests from Iraq, on the other, that such items be used for civilian and peaceful purposes."[13]

The facilities in Iraq affected by this provision are the facilities that comprise the Al Muthanna State Establishment, that is, the site at Al Muthanna, the three Fallujah sites, and Muhammediyat stores. Since it produces phosgene, the Al Qa' qa' State Establishment will also be subject to the compliance monitoring regime established by the Security Council under resolution 715 (1991).



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In June 1991 the Iraqi authorities requested permission to remove several items of equipment from the stores at the Al Muthanna site to the chlorine plant at Al Fallujah (Fallujah site 2) and the pesticide plant (Fallujah site 3) to enable those plants to produce chemicals for water purification and for pesticide formulation respectively. The Executive Chairman granted these requests, subject to certain strict accounting requirements. The guiding principle that has been established is that any item of dual-use equipment "tainted" by association with any of Iraq's programmes of weapons of mass destruction shall be liable for destruction unless Iraq requests an exemption.

**ANNEX I**

Iraqi CW Munitions

| *Weapon Category* | *Agent* | *Declared* | *Found* |
|---|---|---|---|
| Al Hussein ballistic missile warheads | binary sarin | 14 | 14 |
| Al Hussein ballistic missile warheads | sarin | 16 | 16 |
| R-400 aerial bombs | binary sarin | 336 | 336 |
| 122-mm rockets | sarin | 6 120 | 6 352 |
| 122-mm rockets[a] | sarin | 4 660 | - |
| LD-250 aerial bombs[b] | mustard | 1 100 | 915 |
| AALD-500 aerial bombs | mustard | 675 | 676 |
| 155-mm artillery shells | mustard | 12 634 | 12 694 |
| 120-mm mortar bombs[c] | CS | 20 000 | - |

a Comprising 2,500 at Al Muthanna and 2,160 at Khamisiyah which were destroyed by the Coalition bombing: the numbers are impossible to verify with accuracy.

b It was impossible to count the 200 LD-250 bombs declared to be at Muhammediyat because of the extensive damage to the facility caused by the Coalition bombing.

c It was impossible to count the 120-mm mortar bombs declared to be at Muhammediyat because of the extensive damage to the facility caused by the Coalition bombing.

**ANNEX II**
CW Precursor Declarations

| *Precursor* | *Declared (Tonnes)* | *Found (Tonnes)* |
|---|---|---|
| *Intermediates* | | |
| Methyl phosphoramidic dichloride(D4) . . . . . | 150 | 173 |
| Thiodiglycol . . . . . | 144 | 167 |
| *Dual-Use Chemicals* | | |
| Sulphur monochloride and sulphur dichloride . . . . | 6 | 6 |
| Phosphorus trichloride[a] . | 2 100 | 1 340 |
| Thionyl chloride . . . . . | 273 | 297 |
| Phosphorus oxychloride . | 500 | 596 |
| TOTAL | 3 173 | 2 579 |

a The Iraqis attributed the discrepancy between the declared and found figures for phosphorus trichloride to evaporation and leakage from the containers.

**Notes**

1 Iraq became a party to the Geneva Protocol on 8 September 1931. When doing so, in common with many parties at the time, it entered a reservation to the effect that it would not be bound by the Protocol in relation to non-parties, and that it reserved the right to retaliate in kind in the event that chemical weapons were used against Iraq.

2 See, for example, "Report of the Specialists Appointed by the Secretary-General to Investigate Allegations by the Islamic Republic of Iran Concerning the Use of Chemical Weapons" and similar titles: United Nations Security Council documents S/16433 of 26 March 1984, S/17127 of 17 April 1985, S/17911 of 12 March 1986, S/18852 of 8 May 1987, S/19823 of 25 April 1988, S/20060 and S/20063 of 20 July 1988, S/20130 of 19 August 1988; "The Chemical War: Journey to Iran", *NBC Defense and Technology International*, vol.1, No. 1, April 1986, pp. 28-37; Gustav Anderson, "Analyses of Two Chemical Weapons Samples from the Iran/Iraq War", *NBC Defense and Technology International*, vol. 1, No. 1, April 1986, pp. 62-65; and Peter Dunn, "The Chemical War: Iran Revisited", *NBC Defense and Technology International*, vol. 1, No. 3, June 1986, pp. 32-39.

3 "UN Team Finds Chemical Arms 4 Times Greater than Iraq Claims" *New York Times*, 31 July 1991, p. 1.

4 Of these, 6,120, said by Iraq to be "normal", are leaking badly; the remainder have to all intents and purposes been destroyed, as notified by Iraq, and are too dangerous to be moved. They will have to be destroyed *in situ*, probably by explosive demolition.

5 In Iraqi usage, the nerve agent listed as "sarin" can be either GB, GF or a mixture of the two.

6 In Iraqi usage, a "binary" or "binary sarin" weapon contains a 60/40 wt/wt mixture of the alcohols isopropanol and cyclohexanol. The other ingredient required to produce the nerve agent—DF—is added to the weapon shortly before use, thus producing a 50/50 GB/GF mixture. Iraqi officials said they had adopted this procedure because of the problems they had had with the rapid deterioration in the quality of their sarin after manufacture.

7 Security Council document S/23268 of 4 December 1991. The identification of n-butyl sarin and ethyl sarin has been disputed by the Iraqis. When questioned specifically about ethyl sarin by the second CW inspection team (UNSCOM 9) in August 1991, Iraqi officials denied they had ever made it.

8 This total does not include a small amount of hydrogen fluoride (approximately 4 tonnes) or the chemicals isobutanol, isopropanol and cyclohexanol, which are dual-use chemicals used in the manufacture of G-type nerve agents made by Iraq, nor does it include 12 tonnes of diisopropylamine and 25 tonnes of dimethylamine hydrochloride found at Fallujah 1. The main precursors declared by Iraq are listed in annex II.

9 Iraq has informed the Special Commission that there are no dedicated CW production facilities in Iraq other than those contained within the Al Muthanna State Establishment. This establishment comprises the large CW production facility also known as Al Muthanna, the three facilities in the Al Fallujah area known as Fallujah Sites 1, 2 and 3, and the stores at Al Muhammediyat. Iraqi officials have informed the Special Commission that the original purpose of the three sites at Fallujah was the production of chemical weapons precursor chemicals for the final synthesis of CW agents at the Al Muthanna facility. They said that no chemical weapons had been produced at these sites. Construction of the three Fallujah facilities began in the mid-1980s, but slowed down with the end of the Iran-Iraq war, when the facilities were redirected to civilian use. All three sites were heavily damaged during the hostilities of January/February 1991. Two are currently being rebuilt: one to produce chlorine for water purification (Fallujah 2, also known as the chlorine plant) and the other for pesticide formulation (Fallujah 3, also known as the pesticide plant). Iraqi officials have also informed the Special Commission that the Al Qa' qa' State Establishment pro-

duces phosgene, but denied that phosgene was ever produced for use, or used, as a chemical weapon.

10 The adoption of resolution 687 (1991) on 3 April 1991 occurred only some six months or so after the successful transport in October/November 1990 of United States chemical munitions in Germany to Johnston Atoll in the Pacific for destruction there, a matter which had been the subject of intense international public interest. Consequently, there had been some media speculation at the time of the formation of the Special Commission that it might seek to have Iraq's chemical munitions also taken to Johnston Atoll, or to a location in the vicinity of Iraq, for destruction. The Special Commission ruled this out from the start.

11 See, for example, document CD/1074 of 20 March 1991, which reports the destruction by the United States of some 720 tonnes of the incapacitating agent BZ at the Pine Bluff Arsenal destruction facility. This operation from conception to completion took 13 years and cost almost $163 million (the actual destruction phase being around 18 months).

12 United Nations, Department of Public Information, Press Release IK/27, of 24 June 1991.

13 United Nations Security Council document S/23165, of 25 October 1991, annex, para. 22.

# Principal Technological and Environmental Aspects of the Destruction of Chemical Weapons

Georgi S. Leonov and Vladislav V. Sheluchenko

Those countries which, to date, have dealt with the problem of destroying chemical weapons have, as a rule, addressed it in the context of national programmes aimed primarily at the destruction of munitions the condition of which has become critical, and at the destruction of obsolete chemical agents held in storage facilities. As talks progress on global and complete chemical disarmament, the issues connected with the technical solution of this problem are increasingly going beyond national frontiers and becoming the shared concern of all countries throughout the world. The destruction of chemical weapons raises particular apprehension among people who live in the immediate vicinity of storage facilities and in regions where chemical weapons are deployed.

It is essential to guarantee the safety of the destruction methods and the detoxification processes, and to ensure reliable monitoring at all stages of the destruction. The urgency of this problem is stressed in the Agreement between the

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USSR and the United States on Destruction and Non-Production of Chemical Weapons and on Measures to Facilitate the Multilateral Convention on Banning Chemical Weapons:

> "Each Party, during its destruction of chemical weapons, shall assign the highest priority to ensuring the safety of people and to protecting the environment."[1]

In this context, considerations of confidentiality are of lesser importance than the need for all sides to make certain that the correct technical approach has been adopted to ensure safe and effective operating conditions in facilities for the destruction of chemical weapons. This approach necessitates the fullest possible exchange of information with specialists on such key issues as the methods and specific technologies used for the destruction of chemical weapons and measures to guarantee safety and protect people and the environment.

It was precisely this approach that was demonstrated at the meeting on the destruction of chemical weapons, attended by specialists from 18 countries, held in Geneva from 7 to 10 October 1991. It was stressed that the primary goal of cooperation was to ensure a more comprehensive approach to environmental problems, to select and assess the safest technological processes and to perfect measures for monitoring the operation of facilities.

The decisive criterion for technological aspects of the destruction process is thus that they guarantee to the fullest possible extent safe working conditions and protection of the environment. The complexity of this problem is due, in large measure, to the diversity of chemical agents, which contain phosphorus, sulphur or arsenic, and also differ in physical, chemical and toxological properties, as well as in the specific construction of the chemical munitions.

Because of this diversity of agents and munitions it is necessary to elaborate, as far as possible, universal methods of destruction. The technology used must take into account the specific features of work with highly toxic substances and

must incorporate proven methods and approaches, including the indispensable practical experience of work with highly toxic chemical agents. This last consideration is of particular importance since the experience obtained will make it possible to elaborate and implement measures that will ensure safe working conditions and the protection of the environment. These measures, which will take into account the realities of work with extremely toxic chemicals, include regulations on health, hygiene, fire prevention and environmental protection, as well as legal obligations. The strict regulations governing safety requirements and environmental protection in the USSR ruled out incineration, the most widely used method of destroying chemical agents.

This method had been studied in some detail. The decision to reject the incineration of mustard and lewisite was prompted primarily by the possible formation of the by-products dioxin and benzofuran. This is one aspect of the issue.

Attention must also be given to the safety problem relating to the technological process of incinerating chemical agents. We are dealing with a system that, from a functional point of view, is closely interconnected and operates without interruption. Consequently, disruption of even one parameter of the process could lead to a hazardous situation in which chemical agents might be released into the atmosphere; accordingly, higher demands are made as regards the reliability of the technological equipment and the control system and as regards environmental monitoring.

The method of caustic hydrolysis is also more or less universally used for the destruction of chemical agents containing phosphorus, sulphur and arsenic. The exchange of technical information that took place at the experts' meeting held at Geneva in October 1991 made it apparent that, in the initial stages of developing technological processes for the destruction of chemical weapons, the USSR was not alone in considering caustic hydrolysis as the principal method and,

furthermore, attempts were made to use the process industrially for sarin and soman detoxification. The decision not to continue this work was prompted by the following primary considerations: the large quantity of effluents, which require further obligatory processing, and the reversibility and heterogeneity of the process.

Undoubtedly the most effective and universal ways of disposing of chemical weapons are burial in deep mine shafts or dumping on the seabed. These methods hardly merit consideration, however, if only in view of their unethical nature.

In our opinion, the requirements for the greatest possible safety of working conditions and for maximum protection of the environment are most fully met by a two-stage, intermittent process for the destruction of chemical weapons.

The first stage comprises the detoxification of sarin, soman, VX and mustard agent, leaving a reactive mass of low toxicity; in other words, it accomplishes one of the main tasks, that of irreversibly converting a chemical warfare agent, under smooth and strictly controlled conditions, into a product unsuitable for further military use. In this connection, it should be stressed that this process is conducted on an intermittent basis, ensuring that any hazardous developments will be confined to minimal, strictly limited quantities of the agent being processed.

Facilities for the dismantling of chemical munitions are also equipped to operate on a piece-by-piece basis, thus significantly reducing the magnitude of any hazardous situation. It is at the dismantling stage that the munitions are opened, the chemical agent is removed by vacuum transfer and the surface of the munition casing is degassed. The inner surface of contaminated equipment and piping is subjected to degassing every time dismantling operations are conducted.

The second stage of the process is incineration, or conversion into a product suitable for commercial use, of the substances of low toxicity resulting from the detoxification of

the agent. The degassed munition casings are also burned at this stage.

The technological process described above is extremely reliable. It has been tested and proven in the case of the destruction of munitions whose condition had become critical, as well as of various types of chemical munitions either individually or in small batches. In this way, several thousand chemical artillery shells, rockets, mines, aerial bombs and missile warheads, containing some 300,000 kilograms of chemical agents of all categories, have been destroyed.

The environmental safety and effectiveness of the technological processes have been demonstrated, a number of important parameters have been defined and the reliability and efficiency of the environmental monitoring system have been confirmed by means of the analytical procedures developed.

In Shikhany, in 1987, representatives of the States participating in the Geneva talks demonstrated the destruction of a sarin-filled bomb using a transportable system.

The problem involved in the destruction of lewisite and lewisite-based agents raises rather different considerations. During the disposal of organophosphorus agents, the destruction process results in the formation of inorganic compounds of phosphorus, which constitute vital elements in the natural cycle. The possibility thus exists of such processing with the aim of producing mineral salts for commercial use.

Compounds of arsenic, on the other hand, present a special case, since arsenic is toxic in almost all combinations and, accordingly, must be closely monitored wherever it is present.

For this reason, in designing processes for the destruction of lewisite, one possibility is to create chemical compounds of arsenic with low toxicity, which can then be buried. The process developed in our country for the destruction of lewisite and mustard-lewisite agents is based on a detoxification reaction with molten sulphur in its elemental form, pro-

ducing a water-insoluble polymer, which is subsequently buried.

The destruction of lewisite can, however, be seen from another point of view, namely as a source of arsenic, which constitutes approximately 30 per cent of the agent. In this context, attention should be given to the processing of lewisite by chlorinating it to yield arsenic trichloride, for subsequent conversion into products for commercial use.

Thus, fairly reliable and developed processes are currently available for dismantling virtually all types of munitions and for the destruction of all varieties of chemical agents.

It should be noted that the technological processes currently recommended for destroying chemical weapons have been arrived at after thorough analysis and laboratory testing of the traditional methods and numerous alternative procedures for detoxifying chemical agents. Included among the traditional methods are the familiar degassing procedures based on the use of chlorinating agents, alkalis, oxidants and the like.

Noteworthy among the alternative procedures are thermochemical and photochemical destruction of chemical agents in a low-temperature plasma; thermotechnical destruction through adiabatic compression; thermal destruction of chemical agents in a sealed container; destruction of chemical weapons by underground nuclear explosions; and biodegradation of liquid chemical agents.

The directions of research referred to above are of undoubted value in the processing or destruction of toxic industrial waste and in eliminating the consequences of environmental disasters and accidents through such procedures as the recultivation of contaminated land. In the specific area of destroying stockpiles of chemical weapons, however, and, in particular, of ensuring compliance with the requirements of the draft convention on the prohibition and destruction of chemical weapons, use must be made of the safest technolo-

gies, those which cause the least environmental damage and have been proven in practice. The search for new technologies, and their development and testing, will entail postponing the beginning of any wide-scale destruction to the end of the twentieth century, leaving open the risk of the possible use of existing stockpiles, and, at the same time, increasing the dangers attendant upon their storage. The cost of storing stockpiles of chemical weapons will also rise, significantly increasing the overall cost of achieving the noble objective of ridding mankind of chemical weapons.

In conclusion, it should be noted that the process of destroying chemical weapons under strict compliance with safety and environmental protection requirements is more complex and costly than their original production could ever be.

**Notes**

1 The text is reproduced in *The United Nations Disarmament Yearbook*, vol. 15: 1990 (United Nations publication, Sales No. E.91.IX.8), appendix IV, article 1, para. 2.

# Environmental Destruction as a Method of Warfare

## Do We Need New Law?

Michael Bothe

### Introduction

The torching of the oilfields by Iraq during the recent Gulf War and the release of immense quantities of oil into the soil and the marine environment triggered not only a general feeling of disgust but also a debate on the question whether international law could or should have prevented these actions. Some legal experts believe that international law adequately covers and prohibits such acts and that the problem lies rather in implementation of the existing law. Others suggest that existing international law is not yet adequate to protect the environment against the perils of warfare. Both views are valid.

To evaluate the situation, it is necessary to understand laws governing armed conflict and laws governing the environment. Each body has its own history and has developed independently of the other. They are not fully in accord. (Those who apply or develop one field of international law usually ignore others.) The situation is, however, changing.

The main concern of the laws of war is to protect the victims of war. Above all, the laws of war are designed to reduce human suffering. On the other hand, military necessity is a key element of the law of war. This fact has had both a restraining and a permissive effect: it implies that any destruc-

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tion or injury which does not yield any military advantage is illegal. Moreover, the notion of military advantage is by no means unlimited. Only "military targets" may be attacked, not the civilian population or civilian objects (principle of the "immunity" of the civilian population). Persons who are *hors de combat* must also be spared.

The laws of war date back a long way. Major efforts were made to codify the laws at the turn of the century at the Hague Peace Conferences of 1899 and 1907. In parallel with those attempts, rules concerning the protection of particular kinds of victims were developed in the so-called Geneva Law, beginning with the Geneva Convention I of 1864, relating to the protection of the wounded and sick in the armed forces in the case of war on land. Today, larger fields of the laws of war are covered by the four Geneva Conventions of 1949 and the two Protocols Additional thereto of 1977. But other questions, such as those of the protection of cultural property and of the prohibition of certain specific conventional weapons, are new developments contained in separate instruments. While the laws of war are in part based on customary law, many are also codified in a series of treaties, some of which are, however, rather old and do not correspond to the realities of modern warfare, in particular, as regards the law governing armed conflict at sea and the law of neutrality.

Environmental law consists of a mix of rules, and is a much more recent phenomenon—though elements of environmental law also date back many centuries, with some having roots in old Roman law, for example. The basic concern of environmental law is to preserve the limited resources of our planet. A principal element is that no State may cause, or permit, any significant damage to other States. Another old principle is that no State may use shared or common elements of the environment in a way that excludes their use by others, and that competing uses must somehow be accommodated. But these traditional rules are by no means sufficient to protect

natural resources, which are the life-support systems of all humanity, against the hazards of our modern industrial society. Thus, in the interest of preserving our planet for future generations, activities of potential danger to the environment must be restrained or prohibited. As future deterioration of the environment in many parts of the world may be the result of many small causes, it is essential to address each of those, even if the impact of a given activity may be minimal. No possible cause of environmental deterioration should be excluded from this kind of restraint, and this must apply to military activities as well.

It is obvious that such requirements are somewhat at odds with the notion of military necessity. Which, then is the necessity that counts? Is it the need to achieve a military victory—or to put it in more acceptable terms, the need to defend the security of a country? Or is it the need to preserve all elements of the environment for future generations? A military commander might say: How could I put the survival of my country in jeopardy for the sake of preserving some rare species of birds? An environmentalist might say: What entitles a few States to put the future of humanity in jeopardy just because they are unable to resolve their problems by peaceful means?

An attempt will be made here to analyse where current international law stands on those questions and where those answers are not yet adequate. In the analysis three quite realistic scenarios will be used as examples: the burning of oil installations, the destruction of a valuable habitat through its transformation into a battlefield, and the destruction of a tanker at sea.

## The First Scenario: The Oil Blaze

The setting afire of oilfields by Iraq in Kuwait was clearly illegal. Because the action did not produce any military advantage whatsoever, it constituted destruction of enemy

property which was not demanded by the necessities of war and as such was prohibited under article 23 (*g*) of the Hague Regulations Respecting the Laws and Customs of War on Land. Within the meaning of article 147 of the 1949 Geneva Convention IV Relative to the Protection of Civilian Persons in Time of War, it was "extensive destruction . . . of property, not justified by military necessity and carried out unlawfully and wantonly", and thus a grave breach of this Convention, which might be punished.

What would, however, be the legal situation if those installations were set afire in order to interdict access to an invading enemy? It may be recalled that at one stage there was some talk of filling the ditches around Kuwait with oil and setting them afire in order to prevent the allied forces from entering. It was also said that oil might be released into the Gulf in order to prevent an allied landing. Thus, if the installations were set afire in order to establish a barrier against an invading enemy, this would constitute destruction warranted by military necessity. In other terms, these installations become a military objective because denying them to the enemy constitutes a definite military advantage, as provided by article 52 of Protocol I Additional to the Geneva Conventions of 1949 and a corresponding rule of customary law.

But this does not necessarily mean that the act is permissible. The destruction may still be illegal under article 51, paragraph 5 (*b*), of the Protocol, inasmuch as it would be an attack that might be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated (principle of proportionality).

It must therefore be asked: What would be the side-effects of those fires? In Iraq, human, animal and plant life in areas surrounding the burning oil installations was greatly endangered. According to traditional standards, the value

judgement that this damage was excessive would to a large extent depend on the actual use of that area. If it was a desert area where a few shepherds passed by with their sheep occasionally, one might come to the conclusion that the damage was not excessive. An environmentalist would make a different judgement: the desert being a sensitive environment where regeneration was achieved slowly, the destruction would be considered to be particularly serious. But how far is this environmentalist view of the principle of proportionality already part of positive law? It is probably not a matter of controversy that environmental values have to be taken into account when this proportionality judgement is made. But how far can they, in a concrete case, tip the balance in one way or the other? In this respect, the law needs at least some clarification.

Another provision of Protocol I which may be violated is article 55:

> "Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the civilian population."

Is the damage caused by the burning oilfields "widespread, long-term and severe"? It must be noted that these requirements are cumulative. Some effects could be felt even several thousand kilometres away, but were those also "severe"? Nature around the oil installations being polluted by the smoke will probably not support significant life for a number of years if there is no extensive clean-up. Does that mean long-term and severe damage?

What is the meaning, in the case in point, of the additional requirement that there must be a prejudice to the health or survival of the population? If anything is clear in this

respect, it is the fact that the terms used in article 55 (and similarly in article 35) of Protocol I are very difficult to apply. More serious thought must be given to the question of what can be done in order to yield the results of interpretation in particular practical cases.

Let us now turn to the question of States which are not parties to the conflict. The long-term damage caused by the burning oilfields has already been mentioned. While the principles and treaty provisions discussed so far apply between the parties to an armed conflict, they have no significance in the relationship between the parties to a conflict, on the one hand, and States which are not involved in that armed conflict, on the other.

There was no armed conflict between Iraq and, for instance, Afghanistan, Pakistan or India, on which smoke particles from the burning oilfields may have fallen. The relationship between Iraq and those States is not governed by the laws of war but rather by the "normal" rules of the law of peace. Thus, the general rules of environmental law apply.

But what does that mean in this particular case? There is, of course, the traditional law already mentioned that States may not engage in any activities which cause significant damage on the territory of other States. Do the black particles which apparently fell constitute "damage" within the meaning of the rule? That depends on the actual impact on the respective ecosystems. If, for example, a harvest is destroyed, that is clearly damage. But if the reproduction of a rare animal or plant species is impaired, is that a type of damage that is serious enough to come within the purview of the rule just discussed? The application of the traditional rule becomes all the more questionable if the fumes caused by the blaze just add to the acid rain which falls anyway or to the greenhouse effect.

This, however, is not a specific problem of environmental destruction in times of war: it is a general difficulty of

environmental law. Very slowly, international rules are being developed which are no longer damage-related but which put a limit on certain emissions regardless of the question of the effect a single emission might have somewhere else.

In the case of the Gulf War, there were no such specific rules applicable, but they are being developed. Most European States, for example, are bound by the environmental provisions of the Helsinki Final Act. If similar events occurred in a European State which is bound by the Final Act, the fact that an armed conflict of an internal or international nature involving that State existed would be irrelevant as regards the duties which the State has undertaken. In other words, the armed conflict does not exonerate the State from its duty to reduce sulphur dioxide ($SO_2$) emissions.

Some States would find it hard to accept that new legal impediment to the use of means of warfare of their choice. The problem has difficult political and military implications. Imagine, for example, what this kind of reasoning means for the use of nuclear weapons! Any use of nuclear weapons which causes serious radiation on the territory of a neutral State would for that reason be prohibited. While it might be considered that the law should conform to that reasoning, any attempt to seek such clarification might be counterproductive because it might trigger resistance that would finally destroy the rule as it exists.

### The Second Scenario: A Destroyed Habitat

Let us assume that a State uses the wetlands of a river delta to deploy troops advancing against the enemy. Let us further assume that these wetlands are registered in the list established under the Ramsar Convention of 1971, which means that these lands are a particularly valuable habitat for purposes of nature conservation. The Convention would not, however, prohibit those movements of troops even though they might prejudice the habitat. The presence of those troops

would make the whole area a military objective. If, then, the enemy bombed the area, thus causing further and perhaps irreversible damage to the habitat, no legal objections could be raised under a traditional understanding of the laws of war. The bombing constitutes a perfectly legal attack against a military objective. If this result is to be avoided, military use of the area by the party to which it belongs must be prevented to begin with, but this is possible only if there is then, on the other hand, a legal guarantee that the other side will not use it for military purposes.

For the time being, there is no rule in the laws of war or in international environmental law which would confer any such demilitarized and protected status for the purposes of environmental protection. The idea of specially protected areas that may not be used for military purposes is, however, well known in international humanitarian law. Examples are the "hospital and safety zones and localities" under article XIV of Geneva Convention IV or "demilitarized zones" according to article 60 of Protocol I Additional to the Geneva Conventions of 1949. Both kinds of safety zones require an agreement between the parties to the conflict. Article 60 of Protocol I may well be used for the purpose of excluding certain areas from the conduct of hostilities and also for environmental purposes.

No change of the law is required for that purpose. The only disadvantage to that solution is, as already said, the need for an agreement between the parties.

This may to a certain extent be avoided if another regulatory model is adopted, namely that of the Convention for the Protection of Cultural Property in the Event of Armed Conflict, of 1984. This Convention provides for two degrees of protection, general and special (articles 4 and 8 of the Convention, respectively). The higher degree of protection is acquired by the entry of the protected object in the "international register of cultural property under special protection"

which is maintained by the Director-General of UNESCO (the United Nations Educational, Scientific and Cultural Organization). The object under special protection and its surroundings may not be used for military purposes, but on the other hand, there is also a prohibition against attacking it. This kind of protection seems to be highly desirable for valuable habitat, but this would require a new convention.

### The Tanker War

One of the worst hazards for the marine and coastal environment is oil pollution. For the environment, it makes no difference whether oil pollution occurs in times of peace or in times of armed conflict. Nevertheless, the rules designed to prevent and reduce oil pollution of the seas have been developed since 1954, when the first International Convention for the Prevention of the Pollution of the Sea by Oil was concluded, without specifically addressing the question of oil pollution caused by naval operations in times of armed conflict.

On the other hand, the traditional rules of the law of naval warfare—which would determine the question whether or not in a given case a tanker may be destroyed—are not designed to take environmental considerations into account. Those rules are designed to accommodate essentially three different kinds of interest: the military interest in barring an enemy from essential fuel supplies, the interest of neutral States in free trade and navigation, and concern for the safety of human life at sea.

Therefore four different situations have to be distinguished under the traditional law of naval warfare. First, if the tanker flies the enemy flag, it may be a military (naval auxiliary) or a merchant vessel. Enemy military vessels may be destroyed, and so also may merchant vessels, at least under certain conditions. In the case of a merchant vessel, destruction is not permissible if the ship can be seized. It must be

stressed again that the main reason for that restriction is concern for the safety of the passengers and crew.

Secondly, if the tanker flies a neutral flag, a distinction must be made as to whether the cargo is destined to a neutral or to an enemy port. In the latter case, the oil aboard the ship constitutes contraband and the belligerent has the right to prevent it from getting to the enemy, essentially by exercising a right of visit, search and condemnation. Force may be used to the extent necessary to exercise that right. As a rule at least, destruction of the ship is not permissible.

Thirdly, if the tanker carries oil to a neutral port, the belligerent has no right to impede the continuation of the voyage, even if the fuel comes from the enemy port and the revenue derived from the sale of the oil is used to finance the enemy war effort. The definition of contraband is already quite broad, but it is still limited to materials that have some direct usefulness for the war effort of the enemy.

Fourthly, while this should not be controversial, another justification for attacking tankers flying a neutral flag played a certain role during the Iran-Iraq conflict, namely, the idea of reprisals. If the tanker flies the flag of a neutral State which has violated its duties of neutrality by massively supporting one of the belligerents, it may well be asked whether the other belligerent is entitled to attack and destroy these ships as a measure of reprisal against the violation of neutrality.

To sum up, the rules of traditional law of naval warfare in relation to the destruction of tankers are somewhat complicated, but it would certainly be inappropriate not to heed environmental concerns. On the other hand, as already mentioned, the general rules on the uses of the sea do not contain specific provisions relating to naval warfare operations, but they do contain certain general obligations to protect and preserve the marine environment (article 192 of the United Nations Convention on the Law of the Sea).

It is often said that in the case of an armed conflict, multilateral treaties are suspended in the relationship between the parties to that conflict. This may or may not be so, but those conventions are certainly not suspended in the relationship between the belligerents and States that are not parties to the conflict. Thus, at least in the relationship to States which are not parties to the conflict, belligerents remain bound to respect the general rules that protect the marine environment.

The result of that reasoning may appear to be somewhat surprising, at least for traditional schools of military force. But this is only the result of developments during the last 20 or 30 years. Many human activities which were considered to be quite legitimate and inoffensive 30 years ago have now become illegal and immoral because we have learned that they constitute an unacceptable hazard for the life support systems of our Earth. There is no reason whatsoever to spare military operations from these developments of public conscience and the law.

It is the considered view of this writer that customary international environmental law, as it stands today, already restricts the freedom of States to cause marine pollution by naval warfare operations. This may not, however, be clear to all relevant military decision makers. There is thus every reason to make an effort to clarify the law in this respect by creating more explicit treaty provisions.

Currently, efforts are being made on an expert level to update the treaties relating to naval warfare. The input of environmental law in these discussions has so far been inappropriate. Serious efforts must be made to strive for new rules governing the law of naval warfare that adequately protect the environment. In relation to land warfare, the provisions of Protocol I Additional to the Geneva Conventions concerning protection of the environment constitute an example in this respect, imperfect as they may be. But it must be stressed that any new treaty provision must reflect the state of environmen-

tal conscience today, not that of 1977. In a sense, the environment-related provisions of the Protocol of 1977 are also out of date.

Another area in which the law may need some development is that of facilitating and protecting environmental clean-up operations. There have been some discussions about the creation of a "Green Cross" for that purpose. Instead of creating new institutions, it is more appropriate to consider what can be done with the existing ones. The International Committee of the Red Cross (ICRC) has invaluable experience in arranging operations for assistance to victims of warfare: Why not include the environment among those victims that may be protected? But the ICRC has no experience so far in environmental clean-up operations.

The obvious solution to this problem would be cooperation between the ICRC and other organizations or institutions that are physically in a position to take remedial action in the event of serious pollution. Without entering into the details of the matter, it might be appropriate to give some kind of additional legal protection to this kind of cooperative effort.

## Some Conclusions

If correctly interpreted, the law relating to protection of the environment against damage caused by armed conflict is perhaps not so inadequate—but because of this "if", there is certainly at least a need for clarification of the law. As the examples have shown, there is also some need to develop new rules, for instance to exclude any military use of certain valuable habitats and to ensure the safety of environmental clean-up operations. It is time, in other words, to add environmental concerns more explicitly and more concretely to the restraints on military violence.

# Environmental Destruction in War

Arne Willy Dahl

## Environmental Hazards in General

There is a growing awareness of the adverse effects ordinary human activity has on the environment. The recent war in the Persian Gulf in which hundreds of Kuwaiti oil wells were ignited and millions of gallons of oil were released into the Gulf has highlighted the ways in which military activity may be particularly deleterious as far as the environment is concerned.[1]

The various kinds of environmental destruction can be organized into the following six categories:

### Category A: Destruction of the human environment

The intentional large-scale destruction of developed areas to deprive the local population of shelter and expose it to the elements could be labelled environmental destruction. However, such action is generally not thought to be prohibited under international law. The term "environment" is usually restricted to the natural environment, including plant and animal life. Activities which present possible "grey" areas might be the destruction of artificial water- or sewage-treating facilities, resulting in depriving populations of water and the spread of disease.

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### Category B: Destruction of the cultivated environment

People are dependent on agriculture to sustain life. The destruction of crops or of arable fields, or the destruction of domestic animals or their pastures, can be life-threatening in areas with poor communications or areas where the population lacks the economic capacity to obtain food elsewhere. Peasants have often suffered from roving armies which not only seized food and animals, but also trampled crops. When such destruction occurs on a broad scale, it may be termed "environmental".

### Category C: Destruction of the natural environment of economic importance

People are dependent on natural resources supplied by forestry, fisheries or the like for economic well-being and sometimes even for survival. If forests and lakes are destroyed, or if their output decreases because of environmental degradation, people will suffer.

### Category D: Destruction of the natural environment of non-economic value

There is growing concern about the progressive reduction of the size of the natural wilderness, as this is considered a loss to the world as a whole. There is good reason to fear that the ability of the global ecosystem to sustain human life could in the long run be drastically reduced.

### Category E: General environmental degradation

Ever-increasing human activity may lead to general environmental degradation of regional and even global dimensions, unless sufficiently powerful countermeasures are implemented. Acid rain is causing widespread damage in forests and in the oceans. Fluctuations in the ozone layer over the poles, apparently resulting from industrial emissions,

could give rise to serious problems in the next century. There is even reason to suspect that we may be facing a global climate change because of emissions of greenhouse gases. Powerful fires or explosions (such as nuclear explosions) can whirl up dust and harmful substances, causing regional chilling, acidic precipitation or even the destruction of parts of the ozone layer.

### Category F: Environmental manipulation as a tool in warfare

It is conceivable that environmental forces could be manipulated with hostile intent. For example, weather patterns could be changed in order to induce drought. Such manipulation could have various effects, from destruction of the human environment to general regional or even global environmental degradation.

The focus of this article will be on *legal instruments as they relate to* environmental destruction of the types indicated in categories C to F—in other words, destruction of the natural environment, affecting people directly or indirectly. Environmental destruction through the use of noxious gases will not be covered, nor will nuclear warfare be dealt with in this connection, though it is clear that nuclear, biological or chemical warfare would harm both the human and the natural environment seriously.

## Legal provisions of relevance to environmental destruction in war

### The Hague Convention IV

In its annex (regulations respecting the Laws and Customs of War on Land), the Hague Convention IV, of 1907, gives rules which are considered to be customary law today. According to article 23 of the Regulations it is especially forbidden to destroy or seize the enemy's property, unless

such destruction or seizure be imperatively demanded by the necessities of war.

### The Geneva Convention IV

The Geneva Convention IV, relative to the Protection of Civilian Persons in Time of War, of 12 August 1949, is binding on virtually all independent States in the world. With its accession to the Convention on 10 January 1991, Bhutan became the 164th and latest adherent.

According to article 53 of the Convention, "any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations".

### Article 52 of Protocol I Additional to the Geneva Convention of 1949

As of 30 April 1991, Protocol I of 1977, Additional to the Geneva Conventions of 12 August 1949, had been ratified or acceded to by 102 States. A steady flow of ratifications and accessions gives reason to believe that the Protocol will achieve more or less universal acceptance, although some major Powers have strong objections to certain clauses of the Protocol. Many of the provisions, however, are of a general nature, more or less confirming customary law.

Article 52 confirms an old customary rule protecting civilian objects in general, limiting attacks to "military objectives". The point of this rule and other related rules is that there shall be no destruction unless it has a military purpose, giving a military advantage that outweighs the concern for collateral damage to civilian objects—referred to as the principle of proportionality.

### Article 54 of Protocol I

Article 54 of Protocol I prohibits starvation of civilians as a method of warfare. According to paragraph 2 of the article, it is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population for the specific purpose of denying them for their sustenance value to the civilian population. This prohibition does not apply to a party defending its own national territory when imperative military necessity requires derogation from the prohibition in paragraph 2.

### Article 35, paragraph 3, and article 55 of Protocol I

According to article 35, paragraph 3, of Protocol I, it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.

According to article 55, paragraph 1, care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population. Paragraph 2 states that attacks against the natural environment by way of reprisals are prohibited.

According to the commentary by the International Committee of the Red Cross to the Protocols, "long-term" is interpreted as a matter of decades.

### Article 56 of Protocol I

Article 56 of Protocol I protects works and installations containing dangerous forces. These, namely dams, dykes and nuclear electrical generating stations, shall not be made the object of attack, if such attack may cause the release of dangerous forces and consequent severe losses among the

civilian population. The list of protected objects is exhaustive, and oil-producing facilities were considered, but deliberately deleted when the text was drafted, because of the obvious military value of such installations, at least in a war of some duration.

### ENMOD Convention of 1977

The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (the ENMOD Convention) has been ratified by more than 50 States, including some major States, such as the United Kingdom, the United States and the former USSR.

According to article I, each State party to the Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.

The prohibition refers to the causing of earthquakes and tsunamis, an upset in the ecological balance of a region, changes in weather patterns, changes in climate patterns, changes in ocean currents, changes in the state of the ozone layer, and changes in the state of the ionosphere, as illustrative examples.

In the negotiation of the Convention it was understood that the terms "widespread", "long-lasting" and "severe" were to be interpreted as follows:

a "widespread": encompassing an area on the scale of several hundred square kilometres;

b "long-lasting": lasting for a period of months, or approximately a season;

c "severe": involving serious or significant disruption or harm to human life, natural and economic resources or other assets.

It should be noted that the terms are not necessarily interpreted in the same way as the corresponding terms in

Protocol I, articles 35 and 55. The interpretation of "long-term" in Protocol I is definitely different from that of "long-lasting" in the ENMOD Convention. It should also be noted that the above-mentioned conditions are cumulative in Protocol I, and alternative in the ENMOD Convention.

## Martens Clause

In the preamble to the 1907 Hague Convention IV are found some general principles, including the so-called Martens clause (suggested by the Russian Czar's plenipotentionary Professor Martens), which says:

> "Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and the dictates of the public conscience."

A corresponding formulation is found in Protocol I, article 1, paragraph 2. In so far as environmental destruction may not be specifically covered by the above-mentioned rules, this clause seems highly relevant.

The author has been advised informally that in State practice there is an obligation, corresponding to the Martens principle, to avoid environmental destruction in military operations unless military necessity demands and the rule of proportionality permits. Customary law is, however, by nature crude and does not supply rules of procedure or practical measures of implementation.

## General international law on protection of the environment

There are a great number of internationally binding rules on pollution, ranging from general prohibitions against

dumping at sea to local or regional agreements concerning such matters as transboundary pollution. These conventions or tractates can be more or less specific as regards, for example, permitted emissions or levels of pollution, procedural rules and assistance in efforts to combat abuses.

It is somewhat uncertain to what extent such rules still apply in wartime. A reasonable solution might be that general prohibitions and emission limits still apply between belligerent adversaries, but will yield to military necessity balanced by the principle of proportionality. The law of neutrality in general acknowledges the right of belligerents to take measures which can be very inconvenient to neutrals, to say the least. For such "inconveniences" of an environmental nature, there should be narrow margins for what neutrals will have to suffer, at least without compensation. There should also be narrow margins for the right of any belligerent to strain the common environment of the atmosphere, the high seas, the polar caps, or possibly even outer space even when no neutral country is specifically affected.

When it comes to practical cooperation, it can hardly be expected that belligerent adversaries would continue to make cooperative efforts between themselves, or meet their obligations according to some agreement of mutual assistance in pollution disasters. On the other hand, a belligerent should respect and protect an adversary's pollution-combating activities, and should not regard assistance from neutrals in such matters as a hostile act. Anti-pollution activities deserve protection analogous to humanitarian relief and civil-defence activities.

### Question of the adequacy of legal provisions

The question whether the existing legal aspects are adequate may be discussed from several viewpoints. One of the aspects in question concerns the substance of the basic rules; another whether there is a need for practical arrange-

ments to facilitate adherence for those who honour the rules; and a third is enforcement against those that do not. The question could be discussed in detail. In this connection I can give only some general indications, leaving it to others to analyse more precisely what is covered by the various rules.

## Rules of substance

The Hague Convention IV, the Geneva Convention IV and Protocol I, articles 52, 54 and 56, cover in general environmental destruction of categories A and B. Protocol I, in its article 35, paragraph 3, and article 55, gives some protection against destruction in categories C, D and E, but with a very high threshold. The ENMOD Convention covers the cases in category F, but it is questionable whether the coverage is adequate.

It seems that customary law is developing beyond the requirements set forth in Protocol I, article 35, paragraph 3, and article 55, as these do not prohibit acts harmful to the environment unless the effects are rather drastic. The content of the articles mentioned might be developed through a renewed understanding of the criteria "widespread, long-term and severe". The wording of the articles is, however, not very accommodating, since it does not cover considerations of military necessity, which will clearly be needed if the general threshold of the prohibition is to be lowered substantially.

Protection of environmental values on a belligerent's own territory raises fundamental questions about ownership and responsibility for those values. A conservative view is that environmental values within the territory of a sovereign State belong to this State and are at its free disposal as long as no other State is directly affected. A more radical approach might be that there are some values which belong to mankind as a whole—for instance, species of life threatened with extinction. A duty to protect such values, whether on the grounds of

tractate or customary law, should be honoured also in wartime, even if this is contrary to national defence interests at the time.

The release of oil into the Persian Gulf and the setting on fire of the Kuwaiti oil wells have been seen as important examples of environmental warfare calling for new international legislation or at least the examination of existing international law. From a legal viewpoint, however, these events are not as interesting as they seem, because they involve destruction of the oil itself as a valuable substance. Iraqi liability towards Kuwait is therefore covered by well-established rules in the Hague and Geneva Conventions.

There could be a question, however, whether Iraq has some responsibility towards other countries in the area as a result of regional environmental degradation of the sea and air. There could also be a question whether the burning of the oil is covered by the ENMOD Convention. These questions would have come into sharper focus if the Iraqis had released and burned their own oil for some real or alleged military purpose.

### Rules for practical arrangements

With a view to facilitating the protection of certain objects, installations or areas there are several rules in international humanitarian law concerning safety zones, non-defended localities, protective signs and the like. For objects or areas of specific ecological value, analogous arrangements might be needed. In the absence of rules laid down by a convention, this cannot be done without specific agreement in each case—which is not always very easy to obtain.

### Rules of enforcement

As regards criminal prosecution, the need for the inclusion of specific rules in a convention addressing criminal responsibility seems to vary according to the legal system in question.

From the point of view of Norway, the salient points are whether the act to be prosecuted is against the laws and customs of war, and whether there is an internal penal provision which applies. A specific rule of criminal responsibility in a convention is neither necessary nor sufficient, but it can be useful in obligating the parties to the convention to enact relevant legislation. In some cases it can also be necessary in providing competence *vis-à-vis* rules in international law regarding limits of national jurisdiction.

Liability to make economic compensation presents problems of its own. It seems to me that these problems lie, not so much in the rules of liability as such, as in the rules about how such liability is to be enforced—in other words, the problems are not specific to liability for environmental damage as such. There are, however, serious difficulties in determining the economic loss to be compensated in environmental matters, especially when it comes to destruction of natural environment of non-economic value and general environmental degradation. How does one, for instance, determine the value of a species which has been made extinct, and who is to receive the compensation? These are general problems, not specific to environmental destruction in war, nor even to environmental destruction with international aspects, and shall therefore not be dealt with further here.

## Legal Initiatives

### Falk's proposal concerning a convention on the crime of ecocide

Richard A. Falk, of Princeton University, has proposed a convention on the crime of ecocide.[2] The definition of ecocide includes any of a number of acts committed with intent to disrupt or destroy, in whole or in part, a human ecosystem; including use of nuclear, biological or chemical or other weapons of mass destruction, chemical herbicides to

defoliate and destroy natural forests for military purposes, and extreme use of bombs and artillery. The proposal includes rules for criminal responsibility and investigation by a commission established by the United Nations.

### Plant's elements of a new convention on the protection of the environment in time of armed conflict

Glen Plant, Director of the London School of Economics Centre for Environmental Law and Policy, proposes a convention on the protection of the environment in time of armed conflict. The proposal has been developed in connection with a conference held in London on 3 June 1991, and the proposer's participation at the Meeting on the Use of the Environment as a Tool of Conventional Warfare sponsored by Canada and the United Nations and held at Ottawa on 10 and 12 July 1991. The proposal is mainly a discussion paper, setting forth a structure, but leaving options as to the degree of protection that should be given. It addresses environmental destruction in a broad sense, including a section on the use of mines, booby traps and other devices. It also addresses rules of liability to make restitution, pursuant to criminal prosecution, organization of protection, and relief in favour of the environment.

### Goldblat's suggestion on procedures based on existing treaties

Jozef Goldblat, Geneva Graduate Institute of International Studies, has some proposals for further procedures.[3] He points out a number of deficiencies in current treaty law; notes that amending existing agreements carries a risk that their very survival will be jeopardized; but suggests that, on the other hand, drafting and negotiating a new treaty would be a lengthy procedure, the result of which would be unpredictable. His suggestion is that the adherence to existing treaties should be expanded so as to make them quasi-universal. Parties to

Protocol I of 1977 to the Geneva Convention IV could conclude "further agreements" to ensure additional protection of objects containing dangerous forces, and areas requiring special protection for environmental reasons could be declared as non-defended localities (Protocol I, art. 59).

The parties to the ENMOD Convention could agree, at their review conference in September 1992, to reduce the "widespread, long-lasting or severe" threshold to zero, formally by changing the definition without changing the wording of the Convention as such.

Additional protocols could be proposed to the 1980 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects—known as the inhumane weapons Convention—to cover weapons with environmental effects.

### Other initiatives

Proposals have been made both to the United Nations General Assembly and to the International Red Cross and Red Crescent Conference for wider adherence to the relevant international conventions and for further clarification of the scope of Protocol I and the ENMOD Convention.

## The Author's Suggestions for the Future

It seems to me that it is hardly possible to achieve institutionalized protection against environmental destruction in the form of practical arrangements, protected zones, protective signs, protecting organization and the like without new treaty provisions. There is also a need for rules concerning enforcement.

There is good reason to believe that a clarification of the scope of existing treaty law will reveal lacunae which will need more precise remedies than emerging customary law can provide.

Changing old treaties or making a new convention, however, is a risky project, one which should not be embarked upon unless the prospects of success are good. In the meantime, as this question matures, one might work along the lines proposed by Jozef Goldblat.

One should be conservative as regards the degree of protection, not forgetting that war is a life-and-death business for those concerned, and not a game for which new rules can be written at one's discretion. In war, as opposed to a game, it is not only a victory in conformity with the rules which is a real victory. The law of war can by its nature regulate only those phenomena which are not crucial to the outcome of the battle. It is my general view that, in order to be viable in the long run and in order to survive the stresses of real life, the law of war must take this into consideration.

This means that complete protection of the environment will be unattainable. Situations can, and probably will, arise where considerations of military necessity will override important environmental concerns. As long as war is not effectively outlawed, we will have to live with this.

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**Notes**

1 Some predictions concerning the extent of environmental damage appear to have been overstated. For example, it was thought by some that the large clouds of smoke from the fires which blocked the sun's rays and, for a time, significantly reduced temperatures might have an adverse effect on weather patterns in a large part of the Asian continent. Initial calculations, however, were based on a burning rate of 15 million barrels a day—three times the actual daily amount. Furthermore, the smoke plume did not rise as high as expected, and the soot particles did not travel far. (See Horgan, July 1991, pp. 17-24. See also Small, 1991, pp. 11-12, for calculations.) Finally, the wells were capped more quickly than anticipated: the last fire was put out in early November 1991. It would appear that the permanent environmental destruction, though serious, will be less than was feared.

2 Falk, 1984, pp. 45-49.

3 Goldblat, 1991.

# International Law Applicable to the Gulf War

Paul C. Szasz

## Introduction: Injuries to the Environment in the Gulf War

Every war inflicts damage on the environment.[1] For a conflict of relatively limited duration and geographical scope, the Gulf War seems to have been more destructive in this respect than most, in part because of the unprecedentedly massive use of certain conventional weapons, but mostly because of the following apparently deliberately anti-environmental actions by Iraqi forces:[2]

—Spilling oil into the Persian Gulf, beginning on 21 January 1991 from the Sea Island Terminal near Kuwait City and again on about 31 January from the off-shore terminal at Mina Al-Bakr—though the Iraqis claim that these spills were the result of allied bombing, it seems more likely that they were deliberately caused by Iraqi forces;[3]

—Sabotaging and torching Kuwaiti oil wells, beginning about 12 February and continuing throughout the month, until over 600 wells were on fire and an additional 200 were gushing oil;[4]

—Laying massive numbers of non-self-destructing

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mines and booby-traps, mostly in and around Kuwait, including in the oil fields, and to some extent off the coast of Kuwait.

It should, however, be recognized that the massive allied bombing, and especially the selection of certain targets (namely those whose destruction could lead to the release of dangerous forces)—even if not constituting deliberate attacks on nature—also gave rise to environmental concerns and are subject to testing against the legal principles discussed below.[5]

The question addressed in this article[6] is whether international law is at present adequate to prohibit the several environmental excesses committed during the recent Gulf War, in particular by the Iraqi forces. The answer must be sought first of all in recent international norms designed to protect the environment in warfare; secondly, in well-established humanitarian rules relating to the conduct of war; and thirdly, in international regimes which protect the environment in general but which do not refer to military operations. Lastly, the possible civil and criminal liability of those who perpetrate outrages against the environment in the course of warfare is considered.

In respect of each of these matters, account must be taken of international law both as expressed in treaties, the so-called "conventional" law that is binding only on the parties to the respective agreements, and as the more generally applicable "customary" law, which reflects the way in which States actually behave because they understand that such behaviour is required by that law.

Many of the outrages against the environment that occurred during the Gulf War appear to have violated obligations under the general laws of war, particularly those designed to protect property; most of the substantively pertinent environmental rules, on the other hand, were not binding on the parties concerned. It would therefore seem desirable to strengthen the existing environmental norms and to clarify

their applicability to military actions, to encourage wider participation in some existing treaties, and possibly also to negotiate suitable additional specialized international agreements.

## International Legal Instruments Relating to the Environment and Warfare

Explicit concern for protection of the environment from the ravages of warfare has only a relatively brief history, following on the internationalization of environmental concerns at the 1972 United Nations Conference on the Human Environment held in Stockholm, and the end of the war in Viet Nam. In the late 1970s and early 1980s a number of instruments were adopted which either addressed this concern exclusively or included it in instruments primarily devoted to humanitarian law. To the extent that these instruments are multilateral treaties, they have (as indicated below) not yet attracted sufficiently wide participation; to the extent that they are merely declarations of international organs they do not of course inherently have binding force, and their recent vintage makes it difficult to conclude that they are as yet expressive of customary international law—the creation of which requires relatively extensive State practice.[7]

### The ENMOD Convention

The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques,[8] the so-called ENMOD Convention, was negotiated in the Conference of the Committee on Disarmament (CCD) and adopted by the United Nations General Assembly on 10 December 1976,[9] but as of 31 December 1991, had attracted only 55 parties, including the United States of America, the Soviet Union and the United Kingdom, but not China, France or Iraq (which signed, but has not yet ratified it).[10] Its principal provisions are the following:

"*The States Parties to this Convention,*

". . .

"*Realizing* that the use of environmental modification techniques for peaceful purposes could improve the interrelationship of man and nature and contribute to the preservation and improvement of the environment for the benefit of present and future generations,

"*Recognizing*, however, that military or any other hostile use of such techniques could have effects extremely harmful to human welfare,

". . .

"*Article I*

"1. Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.

". . .

"*Article II*

"As used in article I, the term "environmental modification techniques" refers to any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space."[11]

In addition, ENMOD contains procedural provisions for consultations among the parties, including consultations with the assistance of a committee of experts, as well as for periodic review conferences of the parties. These mechanisms are all designed to operate under the aegis and with the assistance of the United Nations.

Aside from the fact that Iraq is not a party to ENMOD, the difficulty in bringing the terms of the Convention to bear on the actions of that State is that it is not clear that its forces were engaged in using "environmental modification tech-

niques", that is, that they intended to modify the environment (for example, by preventing the use of the Gulf as a source of drinking-water, or by creating clouds of smoke) rather than merely acting destructively to deprive the enemy of assets. If Iraq were a party to the Treaty, it might be possible to resolve these questions by procedures foreseen by that instrument.

### Additional Protocol I[12] to the 1949 Geneva Conventions (Relating to the Victims of Armed Conflicts)[13]

This Protocol, adopted in 1977 after extensive negotiations under the aegis of the International Committee of the Red Cross (ICRC), is basically of a humanitarian nature, as are the four 1949 treaties that it supplements. Nevertheless, reflecting the spirit of the times, it also sets out a number of explicitly environmental provisions, which constitute at present the strongest expression of an obligation to protect nature in warfare:

> "*Part III—Methods and Means of Warfare Combatant and Prisoner-of-War Status*
>
> "Section I—Methods and Means of Warfare
>
> "Article 35—Basic rules
>
> ". . .
>
> "3. It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.
>
> ". . .
>
> "Chapter III—Civilian objects
>
> ". . .
>
> "Article 55—Protection of the natural environment
>
> "1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition

of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.

"2. Attacks against the natural environment by way of reprisals are prohibited."

Unfortunately, the most significant combatants in the Gulf War, including the United States,[14] France and the United Kingdom, as well as Iraq, have not yet become parties to Protocol I. Thus that treaty was at best of scant relevance to that war.

Parties to Protocol I are plainly precluded by the above-quoted provisions from inflicting the type of damage on the environment that Iraq's spillage and burning of oil constituted.

### World Charter for Nature

In 1982, the United Nations General Assembly adopted, by an all but unanimous vote, the World Charter for Nature,[15] which contains the following two relevant provisions:

"5. Nature shall be secured against degradation caused by warfare or other hostile activities.

". . .

"20. Military activities damaging to nature shall be avoided."

Though not a formally binding instrument, the World Charter, because of its extensive and careful negotiation and the large support it received on adoption, does constitute an instrument of which account must be taken in any description of international environmental law.

## International Legal Instruments Relating to the Laws of War

The humanitarian laws of war are of much older vintage than those for protection of the environment. In a sense their codification began in the middle of the nineteenth century,

gained momentum at the 1899 and 1907 Hague Conferences, from which a number of treaties emerged that are still in force, and continued with the adoption of the four Geneva Conventions in 1949[16] and then in 1977 with the adoption of Protocols I[17] and II to the latter instruments. The 1949 Conventions especially have received very wide participation (166 States as of 31 December 1991), and together with the Hague Conventions (to the extent that these have not been superseded) are also considered as expressing the binding customary law on the subjects covered. As indicated above, it is harder to argue that the 1977 Protocols, because of their more recent adoption and lesser participation (respectively 99 and 89 States, which do not include some very significant ones) as yet constitute customary law.

## General Principles

### *1907 Hague Convention IV Respecting the Laws and Customs of War on Land*[18]

The "Martens Clause", set out in the preamble to the 1907 Hague Convention IV, states:

> "Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and the dictates of the public conscience."

The current "dictates of the public conscience" certainly do not allow the type of environmental destruction in which Iraq engaged in respect of oil in the course, and especially at the very end, of the recent Gulf War.

*Regulations Attached to the 1899 and 1907 Hague Conventions and 1977 Additional Protocol I*

Article 22 of the Hague Regulations, in both the versions attached to the 1899 Hague Convention II[19] and to the 1907 Hague Convention IV, proclaimed:

"The right of belligerents to adopt means of injuring the enemy is not unlimited".

The above-mentioned 1977 Additional Protocol I broadened this principle slightly in article 35(1):

"In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited."

It is clear that all these provisions are designed to prohibit unreasonable injuries or destructions, that is, ones that do not bear any rational relation to the military advantage that they might promise to the party concerned. Immediately following this general rule in Protocol I is article 35(3) (quoted above), relating to the environment. Iraq is certainly bound by the 1899/1907 expression of the principle—which constitutes firmly established customary law; however, as pointed out above, this cannot necessarily be claimed of the broader 1977 version, in particular as most of the principal parties to the Gulf War were not parties to Protocol I.

## Protection of Property

*Regulations Attached to the 1899 and 1907 Hague Conventions and 1949 Geneva Convention IV*[20]

Article 23 (*g*) of the Hague Regulations provides:

" . . . it is forbidden:

"(*g*) To destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war;"

Article 55 of the Regulations provides:

"The occupying State shall be regarded only as admin-

istrator and usufructuary of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties, and administer them in accordance with the rules of usufruct."

Article 53 of Geneva Convention IV (Protection of Civilian Persons in Time of War) somewhat strengthens article 23 (*g*) of the Hague Regulations, as follows:

"Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations."

It is clear that Iraq violated these treaty and customary principles in wantonly destroying oil wells and polluting land and water. Certainly these actions were neither "imperatively demanded" nor "absolutely necessary"—indeed, their military value appears most questionable, as they could not have been designed to halt any aspects of the allied attack, and indeed the worst offence, the torching of the oil wells, took place well after the outcome of the war had been determined.[21] In any event, these actions were certainly incompatible with Iraq's obligation to act as a responsible tenant (that is, "usufructuary") of occupied territory and assets.

## Protection of Containments of Dangerous Forces

### *1977 Additional Protocols I and II*

Article 56 of 1977 Additional Protocol I and Article 15 of Additional Protocol II[22] are both entitled "Protection of works and installations containing dangerous forces", and prohibit, unless excused by overriding military necessity, attacks on dams and dikes and on nuclear electrical generating stations, if to do so would unduly endanger the civilian pop-

ulation by the release of, respectively, waters or nuclear pollutants.[23] Although these provisions are thus primarily humanitarian rather than environment-related, it might be noted that:

—In 1976 the International Law Association adopted its Madrid Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict,[24] which, *inter alia*, forbids the destruction of water installations "when such destruction may involve . . . substantial damage to the basic ecological balance".

—In December 1990, coincidentally just towards the end of the quiescent period of the Gulf War, the United Nations General Assembly, basing itself on a number of earlier resolutions by the General Conference of the International Atomic Energy Agency (IAEA),[25] adopted a resolution on "Prohibition of attacks on nuclear facilities",[26] in which it expressed its awareness that such attacks "could result in radioactive releases with grave consequences" and called for the conclusion of an international agreement to prohibit them, including through an improvement of the regime for the protection of nuclear facilities established by Additional Protocol I.[27]

It should be noted that these provisions are narrowly formulated to relate only to the specified hazards, and do not quite establish a general principle that containers of dangerous forces or materials should not normally be attacked if to do so were to endanger civilians or the environment unduly. Thus, for example, attacks on oil tankers or containers are not prohibited by these rules.

## Mines and Other Remnants of War

### *1907 Hague Convention VIII*

The 1907 Hague Convention VIII (relative to the Laying of Automatic Contact Mines)[28] contains regulations

designed to minimize the possibility that naval mines laid in a particular location in time of war should continue to endanger peaceful shipping after the occasion for using them has passed and outside of the area of intended use.

It is not clear whether these rules, which are also considered to constitute part of customary law, were fully observed by Iraq during the Gulf War.

*Protocol II to the 1980 Inhumane Weapons Convention*

Protocol II (on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices)[29] to the 1980 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects requires that minefields either be carefully mapped to facilitate removal after the period of active hostilities or consist of mines that will self-destruct reasonably rapidly so as not to constitute a long-lasting hazard. It also calls for international cooperation in the removal of minefields, mines and booby-traps.

This Protocol unfortunately has, as of 31 December 1991, only 30 parties, which do not include the United States, the United Kingdom or Iraq. (It should be noted that the inhumane weapons Convention, though adopted at a United Nations-sponsored conference, is an extension of the ICRC-sponsored 1977 Additional Protocol I to the 1949 Geneva Conventions.)

*General Assembly resolution 37/215 of 1982*

On 20 December 1982 the General Assembly of the United Nations, after having received reports on several studies concerning the dangers and other problems caused to civilian users of land that had formerly served as battlefields, as testing areas for new weapons or as training grounds for troops, adopted a resolution on "Remnants of war",[30] relevant parts of which read as follows:

"*The General Assembly*,

". . .

"*Convinced* that the responsibility for the removal of the remnants of war should be borne by the countries that planted them,

"*Recognizing* that the presence of the material remnants of war, particularly mines, on the lands of developing countries seriously impedes their development efforts and causes loss of life and property,

". . .

"2. *Regrets* that no real measures have been taken to solve the problem of remnants of war despite the various resolutions and decisions adopted thereon by the General Assembly and the Governing Council of the United Nations Environment Programme;

"3. *Reiterates* its support of the just demands of the States affected by the implantation of mines and the presence of the remnants of war on their lands for compensation from the States responsible for those remnants;

". . ."

There has been no follow-up on that resolution, and thus the sentiments expressed by the General Assembly remain at best hortatory. At this stage it would seem difficult to characterize them even as *de lege ferenda*. However, it might be noted that this resolution is fully compatible with the above-mentioned provisions of Protocol II to the inhumane weapons Convention, is reinforced by Security Council resolution 686 (1991) mentioned below, and also that the asserted primary obligation to remove remnants of war and the secondary one to pay compensation are in consonance with article 24 (*a*) of the draft articles on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law at present being considered by the International Law Commission (ILC)(quoted on p.146 below).

*Cease-fire resolution of the Security Council*

It should be noted that the limited legal force of these several provisions was reinforced by the fact that at the conclusion of the Gulf War Iraq was required to agree to assist in locating its mines, by the temporary cease-fire agreement of 2 March 1991 and by resolution 686 (1991) adopted by the Security Council later on the same day,[31] which reads in relevant part as follows:

> "*The Security Council*,
>
> ". . .
>
> "3. *Further demands* that Iraq:
>
> ". . .
>
> "(*d*) Provide all information and assistance in identifying Iraqi mines, booby traps and other explosives as well as any chemical and biological weapons and material in Kuwait, in areas of Iraq where forces of Member States cooperating with Kuwait pursuant to resolution 678 (1990) are present temporarily, and in the adjacent waters;"

## International Legal Instruments Relating to the Environment

Although the world community, and particularly certain regions, have over the past two decades enormously increased their environmental consciousness, they are still very far from agreement on any binding general environmental norms. Rather, the generally accepted principles are for the most part expressed in non-binding declarations and charters (so-called "soft law"), though, possibly, some of their provisions are gradually becoming accepted as customary law. There are, however, a number of treaties designed to protect certain "commons", such as international waters, from pollution.

These various instruments and principles are for the most part designed with a view to their application to normal activities, and not to the abnormal stresses of warfare. There-

fore, in examining any of these norms, it is necessary first of all to determine whether they are meant to, or reasonably can, apply to the latter situation at all. A negative argument can be based on the normal rule of interpretation that the provisions of a general legal regime are normally superseded by those of a special one, and that the laws of war constitute such a special regime. However, this should not be read as suggesting that warfare dissolves all normal rules of international conduct, but merely that one must examine all such rules as to their applicability in wartime and to warfare.[32]

To the extent that the norms are set out in treaties to which some of the belligerents are parties, it is also necessary to consider to what extent normal treaty relations may be suspended or even terminated by war. While at least suspension normally applies between belligerents, it is generally not true between belligerents and neutrals, and thus the latter may be able to insist that *vis-à-vis* themselves the normal treaty obligations continue to prevail.[33]

## General Environmental Declarations

### *The 1972 Stockholm Declaration*

The Declaration of the United Nations Conference on the Human Environment,[34] which was adopted by the Conference on 16 June 1972 and, later that year, called to the attention of Governments by the United Nations General Assembly,[35] *inter alia* proclaims the following:

> "*Principle 2*
>
> "The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

"*Principle 5*

"The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.

"*Principle 6*

"The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted to ensure that serious or irreversible damage is not inflicted upon ecosystems . . . .

"*Principle 7*

"States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."

Of all general international environmental pronouncements, the Stockholm Declaration is closest to having attained the status of customary law. However, whatever the current binding effect of these originally hortatory statements might be, the question is whether they were ever intended and can now be interpreted to apply also to military activities. In this connection it might be noted that the Declaration contains one direct reference to war, in that principle 26 condemns "nuclear weapons and all other means of mass destruction"; whether this implies permission to use other types of weapons or means of warfare without regard to the environment is by no means clear.

*World Charter for Nature*

Aside from the provisions directly relevant to war quoted and discussed on p.133, the World Charter for Nature

sets out a number of other important rules and prohibitions that were evidently violated by Iraq during the Gulf War.[36]

It would, however, probably be difficult to argue, in the light of the above-quoted two explicitly warfare-related paragraphs, that the others are also meant to apply to military activities. In any event, this relatively recent pronouncement has hardly attained legal force beyond that of a strong recommendation by the United Nations General Assembly, to which Member States are bound to give good-faith consideration.[37]

## Treaties Relating to Seas

*United Nations Convention on the Law of the Sea*

One of the most important subjects dealt with in the United Nations Convention on the Law of the Sea (UNCLOS),[38] adopted and opened for signature at Montego Bay, Jamaica, on 10 December 1982, is that of "Protection and Preservation of the Marine Environment",[39] to which the entire part XII (articles 192-237) is devoted.

This Convention has, of course, not yet entered into force, though by now 51 of the 60 ratifications required therefor have been secured, including that of Iraq. However, a number of important States have not yet taken action and some have formally declared that they do not intend to. Nevertheless, it is widely considered that many of the provisions of the Convention constitute either well-established or recent customary law, and this most likely applies to the general environmental provisions quoted in note 39—though perhaps not to all the means of implementation set out in the rest of part XII.

The question again is whether these provisions were meant to and do apply during periods of hostilities and specifically to military activities—and whether neutral States may insist that their particular rights, as well as their rights in global

commons (for example, the oceans), be respected regardless of any hostilities in which other parties may be engaged.

*Global Treaties relating to Pollution of the Oceans by Oil*

During the past decades, a number of treaties have been concluded, for the most part under the auspices of the International Maritime Organization (IMO), formerly the Intergovernmental Maritime Consultative Organization (IMCO), designed to prevent the pollution of the seas, particularly by oil, and to establish certain legal consequences of such pollution. These instruments include:

a International Convention for Prevention of Pollution of the Sea by Oil,[40] 1954 (as amended);

b International Convention for the Prevention of Pollution from Ships (MARPOL),[41] 1973, and the Protocol of 1978 relating thereto (as amended);

c International Convention on Civil Liability for Oil Pollution Damage,[42] 1969, and the Amending Protocol of 1984;

d International Convention on the Establishment of an International Fund for Oil Pollution Damage,[43] 1971, and the Amending Protocol of 1984;

e International Convention on Oil Pollution Preparedness, Response and Co-operation,[44] 1990.

Unfortunately, although some of these treaties enjoy relatively wide participation, in particular among the States involved in the oil trade, Iraq is not party to any of these. Nevertheless, this extensive acceptance, particularly of MARPOL in its 1978 version (57 States, responsible for 85 per cent of the world's tonnage), suggests that if so many States are willing to undertake to prevent even accidental or incidental pollution, any purposeful action in the opposite sense must be considered as internationally proscribed. Again, however, it must be questioned how far that proscription might be considered as applying to military operations, which are not referred to in any of these instruments.

*Kuwait Regional Convention*

The 1978 Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution[45] provides in relevant part:

> "*Article III*
>
> "*General obligations*
>
> "(*a*) The Contracting States shall, individually and/or jointly, take all appropriate measures in accordance with the present Convention . . . to prevent, abate and combat pollution of the marine environment in the Sea Area [i.e. the Persian or Arab Gulf];"

This treaty was concluded between Bahrain, the Islamic Republic of Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. It should be noted that all of these, except of course Iraq, and Iran, which declared itself neutral, were parties of the allied Coalition in the Gulf War.

## Liability

### Civil Responsibility and Liability for Environmental Damage

*Draft articles under consideration by the International Law Commission*

For a number of years, the International Law Commission has been working to codify the following two complementary topics:

Under the heading "State Responsibility" (for actions prohibited by international law), the Commission has agreed that the breach of an international obligation entails responsibility including, as appropriate, the responsibility to pay financial compensation. Such breaches can, according to the Commission's tentative draft, be classified as either "crimes" or "delicts". In the category of crimes, the International Law Commission is considering the inclusion of:

"a serious breach of an international obligation of essen-

tial importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas".[46]

Under the heading "International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law", the Rapporteur has suggested the adoption of the following draft articles:

"*Article 24*

"*Harm to the environment and resulting harm to persons or property*

"If the transboundary harm proves detrimental to the environment of the affected State:

"(*a*) The State of origin shall bear the costs of any reasonable operation to restore, as far as possible, the conditions that existed prior to the occurrence of the harm. If it is impossible to restore these conditions in full, agreement may be reached on compensation, monetary or otherwise, by the State of origin for the deterioration suffered;

". . .

"*Article 26*

"*Exceptions*

"1. There shall be no liability on the part of the State of origin or the operator, as the case may be:

"(*a*) If the harm was directly due to an act of war, hostilities, civil war, insurrection or a natural phenomenon of an exceptional, inevitable or irresistible character; or

". . ."[47]

Thus, as here conceived, environmental harm suffered as a result of military action would be excluded from these proposed draft articles. It should, however, be noted that the obligation to "restore" or alternatively to "compensate" is a general expression of the special duties in respect of mines and other remnants of war discussed on pp. 139-140.

Comparing these extracts from the two sets of draft articles, it appears that if the International Law Commission follows the proposals of its Rapporteurs,[48] it will eventually adopt provisions to the effect that if a *military action* against the environment violates international law, then it should be compensable; if, however, there is harm but no explicit violation of binding norms, then a State would not be liable.

*Security Council resolution*

As it happens, the only international legal instrument that directly relates to civil liability for environmental damage caused by warfare is Security Council resolution 687 (1991), setting the conditions for the cessation of the Gulf War,[49] which in pertinent part reads as follows:

> "*The Security Council,*
>
> ". . .
>
> "16. *Reaffirms* that Iraq, without prejudice to the debts and obligations of Iraq arising prior to 2 August 1990, which will be addressed through the normal mechanisms, is liable under international law for any direct loss, damage, *including environmental damage and the depletion of natural resources*, or injury to foreign Governments, nationals and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait;" [emphasis added]

Though not explicitly stated by the Council, this specific disposition—which was accepted by Iraq[50] and thus also acquired at least bilateral conventional force—appears to be based on those partly well-established and partly still developing principles of customary international law that the International Law Commission is, as pointed out above, trying to codify.

*1949 Geneva Convention IV and 1977 Additional Protocol I*

Article 147 of the Geneva Convention relative to the Protection of Civilian Persons in Time of War provides in pertinent part as follows:

> "Grave breaches . . . shall be those involving any of the following acts, if committed against persons or property protected by the present Convention: . . . extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly."

Thus at least the destruction of the Kuwaiti oil wells would seem to qualify as a "grave breach" of the 1949 Convention.

Article 85 of Additional Protocol I to the 1949 Conventions provides in relevant parts as follows:

> "3. . . .the following acts shall be regarded as grave breaches of this Protocol, when committed wilfully, in violation of the relevant provisions of this Protocol, and causing death or serious injury to body or health:
>
> ". . .
>
> "(*c*) launching an attack against works or installations containing dangerous forces in the knowledge that such attack will cause excessive loss of life, injury to civilians or damage to civilian objects;
>
> ". . .
>
> "5. Without prejudice to the application of the Conventions and of this Protocol, grave breaches of these instruments shall be regarded as war crimes."

Thus the Protocol, which of course is not yet as widely accepted or well-established as the Conventions that it supplements (and is not now binding as a treaty on most of the participants in the Gulf War), would specify that a grave

breach such as the one of which Iraq appears to be guilty should be regarded as a war crime.

*Draft articles under consideration by the International Law Commission*

As already mentioned on pp.145-146 in connection with civil liability, the International Law Commission, under the topic of "State Responsibility", is considering a proposal to characterize as an international crime "massive pollution of the atmosphere or of the seas".

Under another topic, the "Draft Code of Crimes against the Peace and Security of Mankind", the Commission has just completed its first reading of a set of draft articles (that is, it adopted them in provisional form for the purpose of submitting them to Governments for comments), which include the following two here relevant provisions:[51]

"*Article 22*

"*Exceptionally serious war crimes*

"1. An individual who commits or orders the commission of an exceptionally serious war crime shall, on conviction thereof, be sentenced [to . . . ].

"2. For the purposes of this Code, an exceptionally serious war crime is an exceptionally serious violation of principles and rules of international law applicable in armed conflict consisting of any of the following acts:

". . .

"(*d*) employing methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment;[52]

". . .

"*Article 26*

"*Wilful and severe damage to the environment*

"An individual who wilfully causes or orders the causing of widespread, long-term and severe damage to

the natural environment shall, on conviction thereof, be sentenced [to . . .]."[53]

It should be noted that draft article 22 quoted above specifically refers to military actions. On the other hand, draft article 26, as well as the quoted extract from the Rapporteur's proposals as to State Responsibility, would apply to any type of international action, but, unlike the draft articles on International Liability . . . (p. 146), there appears to be no intention to exclude military actions explicitly, nor would it be logical to do so.

It should also be noted that the draft articles on State Responsibility are meant to deal with crimes of States–a concept that has not as yet been clarified. On the other hand, the draft Code of Crimes . . . deals with crimes by individuals, though article 5 of the draft makes it clear that States may also be responsible for the acts to be set out in the Code.

## Conclusions

### Evaluation of the Existing Law

As pointed out above, the particular offences against the environment that are listed in the introduction to this article are indeed illegal under international law, and may attract economic as well as criminal penalties under that law. However, these conclusions flow almost exclusively from the recognition that these offences constitute wanton crimes against property, rather than environmental offences.

Although some relevant environmental or environment-related law has already been adopted and more is in the process of formulation, that law suffers from one or more of the following defects when applied to the Gulf War:

a The most clearly formulated general provisions, those in articles 35(3) and 55(1) and (2) of the 1977 Additional Protocol I to the 1949 Geneva Conventions, have not yet been accepted by many militarily significant States;

b Other important and pertinent provisions, such as those in paragraphs 5 and 20 of the World Charter for Nature, merely constitute solemn recommendations of the United Nations General Assembly;

c Many general provisions, such as those of the 1972 Stockholm Declaration, which may be on the way to becoming customary international law, are not clearly enough applicable to war-related offences against the environment;

d Finally, certain treaty provisions, such as part XII of the 1982 United Nations Convention on the Law of the Sea, are not yet in force, and in any event it is not clear whether they apply to military hostilities at all and, if so, in respect of what States.

## Some Proposals

In order to strengthen the existing international law for the protection of the environment against military activities, the following actions should be considered:[54]

a Encouragement of wider participation in already adopted treaties that have directly relevant provisions, such as the 1976 ENMOD Convention, the 1977 Additional Protocol I to the 1949 Geneva Conventions, and at least Protocols II (Mines) and III (Incendiary Weapons)[55] to the inhumane weapons Convention;

b Encouragement of wider participation in other treaties that are directly protective of the environment, even if their application to military situations is not clear, such as the 1982 United Nations Convention on the Law of the Sea and the various oil pollution conventions, especially the 1973/1978 MARPOL; their wartime applicability might be clarified or extended through the regular review and amendment processes built into most of these instruments.

In the long run, it may be desirable to formulate a special treaty explicitly to protect the environment in wartime. Such an instrument should be designed to gain rapid accept-

ance by as many militarily significant States as possible, by minimizing any avoidable political controversies, such as those that burden Additional Protocol I. Such a treaty might include:

a At a minimum, the general provisions in articles 35(3) and 55 of Additional Protocol I and paragraphs 5 and 20 of the World Charter for Nature;

b Some specific humanitarian provisions, clearly extended to environmental protection, such as those in article 56 of Additional Protocol I and in article II, paragraph 4, of Protocol III to the inhumane weapons Convention;

c Provisions relating to the remnants of war, such as those contained in Protocol II to the inhumane weapons Convention and as called for in the United Nations General Assembly resolution on remnants of war;

d Extension to military situations of at least certain well-established peacetime anti-pollution regulations, such as those set out in part XII of the 1982 United Nations Convention on the Law of the Sea, in the 1954 Oil Pollution Convention and in the MARPOL Convention;

e The introduction into military planning of certain well-established devices for protecting the environment, such as environmental impact evaluations of new weapons systems,[56] the designation of especially protected areas, and the establishment or designation of a special protective organ (such as the International Committee of the Red Cross is in respect of humanitarian concerns);

f The financial liability of belligerents at least towards neutrals for damage done to the latter or to international commons (such as the high seas, Antarctica and outer space);

g The criminal liability of States and individuals for wanton destruction of the environment under the guise of military operations; for this purpose it may be useful, but not necessary, to establish an international criminal court.[57]

Clearly, such a treaty will not be easy to negotiate.[58]

However, this may be the time to do so, in a period of heightened environmental awareness and concern and at a time when military commitments and procedures are under re-examination in many parts of the world. Indeed, the General Assembly included in the agenda of its forty-sixth session an item entitled: "Exploitation of the environment as a weapon in times of armed conflict and the taking of practical measures to prevent such exploitation", though after a brief debate in the Sixth Committee[59] it decided to await a report at its next session on the activities undertaken in the framework of the ICRC on this issue, especially at the Twenty-Sixth International Conference of the Red Cross and Red Crescent. [60]

**Notes**

*Explanatory note*

The following abbreviations and short forms are used in the notes below:

| | |
|---|---|
| ASIL | American Society of International Law |
| CTS | Consolidated Treaty Series |
| doc. | document |
| ECE | Economic Commission for Europe |
| EEC | European Economic Communities |
| ICEL | International Council of Environmental Law |
| ILA | International Law Association |
| ILC | International Law Commission |
| ILM | International Legal Materials [of ASIL] |
| IUCN-CEL | International Union for the Conservation of Nature (World Conservation Union)—Commission on Environmental Law |
| OECD | Organisation for Economic Co-operation and Development |
| OJEC | Official Journal of the European Communities |
| SIPRI | Stockholm International Peace Research Institute |
| TIAS | Treaties and Other International Acts Series [of the United States of America] |
| UNCED | United Nations Conference on Environment and Development |
| UNEP | United Nations Environment Programme |
| UNTS | United Nations Treaty Series |
| UST | United States Treaties [series] |

1 For two pioneering studies on this subject, see J. P. Robinson, *The Effects of Weapons on Ecosystems* (published for UNEP by Pergamon Press, 1979); and the Stockholm International Peace Re-

search Institute (SIPRI) monograph written by Arthur H. Westing: *Warfare in a Fragile World: Military Impact on the Human Environment* (Taylor & Francis, Ltd., 1980).

2 For some descriptions of the environmental damage consequent on the Gulf War, see:

a Letter of 28 March 1991 from the Secretary-General of the United Nations to the President of the Security Council, reporting on a mission to Kuwait from 23 to 27 March (S/22409, part II.D, pp. 8-10);

b Letter of 26 April 1991 from the Secretary-General of the United Nations to the President of the Security Council, reporting on a mission to Kuwait from 16 March to 4 April (S/22525, part IV, pp. 44-64);

c Introductory report of the Executive Director of the United Nations Environment Programme to the UNEP Governing Council, "Environmental consequences of the armed conflict between Iraq and Kuwait" (UNEP/GC.16/Add.1, sect. V, paras. 28-50, pp. 6-9).

d W. M. Arkin, D. Durrant, M. Cherni, "On Impact: Modern Warfare and the Environment: A Case Study of the Gulf War" (May 1991), a Greenpeace study prepared for a round-table conference organized jointly by the Centre for Defence Studies, Kings College; Greenpeace International; and the London School of Economics, 3 June 1991.

3 See the condemnation of this action by the environmental ministers of the OECD countries and of Yugoslavia and the Environment Commissioner of the European Communities, issued in Paris on 30 January 1991, which characterized the oil release into the Gulf as "a violation of international law" (OECD press release, SG/PRESS(91)8).

4 While scientists agree that the fires harmed the environment, the discord concerning the extent of the damage is considerable. See, for example, Marlise Simons, "British Study Disputes Lengthy Climatic Role for Kuwait Oil Fires: Flights find smoke threat is mainly confined to region", *New York Times*, 16 April 1991, p. C4; John Horgan, "Burning Questions: Scientists launch studies of Kuwait's oil fires", *Scientific American*, 29 July 1991, p. 17; Peter V. Hobbs, "Summary of Preliminary Findings by the U.S. Interagency Team on the Atmospheric Effects of Smoke from the Kuwaiti Oil Fires", submitted to the Gulf Pollution Task Force of the United States Senate Committee on Environment and Public Works.

5 See the accusations summarized by the Permanent Representative of Iraq to the United Nations in a letter of 12 August 1991 addressed to the Secretary-General (A/46/358-S/22931).

6 This study is based in part on three presentations made by the author on this subject:

*a* American Society of International Law, 1991 Annual Meeting, *Panel: The Environment and the Gulf War*, Washington, D.C., 18 April 1991:

i "Overview of the Existing Law" (reproduced in the 1991 ASIL Proceedings, pp. 215-220);

ii "Extracts from Relevant Legal Instruments".

*b* Canadian Department of External Affairs and International Trade/United Nations Conference of Experts on the Use of the Environment as a Tool of Conventional Warfare, Ottawa, 10-12 July 1991: "Study of and Proposals for Improvements to Existing Legal Instruments Relating to the Environment and Armed Conflict":

i Written report;

ii Introductory statement.

*c* Written statement submitted to the Gulf Pollution Task Force of the United States Senate Committee on Environment and Public Works, 23 July 1991.

7 In this connection it might, however, be noted that at the Conference of Experts referred to in note 6 (*b*) above, paragraph 9 of the Conclusions formulated by the Canadian Co-Chairman included the following: "The customary laws of war, in reflecting the dictates of public conscience, now include a requirement to avoid unnecessary damage to the environment." (Quoted by the representative of Canada in the debate in the Sixth Committee at the forty-sixth session of the General Assembly, A/C.6/46/SR.18.) This conclusion is evidently shared by a number of Western European Governments, but not by that of the United States, as appears from the statement made by the State Department representative at the Conference of Experts, as well as from the testimony of Administration officials (for example, Edith Brown Weiss, Associate General Counsel for International Activities, United States Environmental Protection Agency) and other witnesses (for example, Bernard H. Oxman) at the United States Senate Task Force hearings referred to in note 6 (*c*) above. Incidentally, the OECD ministerial statement referred to in note 3 above would tend to support the position that customary law has already developed on this subject.

8 1108 UNTS 151, 31 UST 333, TIAS 9614, 16 ILM 88 (1977).

9 General Assembly resolution 31/72 of 10 December 1976.

10 See the studies by, respectively, Jozef Goldblat and Allan S. Krass appearing as chapters 5 and 6 of *Environmental Warfare: A Technical, Legal & Policy Appraisal*, Arthur H. Westing, ed. (published by Taylor & Francis, Ltd. for SIPRI, 1984).

11 Though other terms used in article I are not defined in the ENMOD Convention, the General Assembly was informed of an under-

standing formally recorded by the Conference of the Committee on Disarmament as to the meaning of certain of these terms, as follows:

"It is the understanding of the Committee that, for the purposes of this Convention, the terms 'widespread', 'long-lasting' and 'severe' shall be interpreted as follows:

"(*a*) 'widespread': encompassing an area on the scale of several hundred square kilometres;

"(*b*) 'long-lasting': lasting for a period of months, or approximately a season;

"(*c*) 'severe': involving serious or significant disruption or harm to human life, natural and economic resources or other assets.

"It is further understood that the interpretation set forth above is intended exclusively for this Convention and is not intended to prejudice the interpretation of the same or similar terms if used in connexion with any other international agreement."

*See* Understanding relating to article I [of ENMOD], *Official Records of the General Assembly, Thirty-first Session, Supplement No. 27* (A/31/27), annex I.

12 1125 UNTS Registration No. 17512, 16 ILM 1391 (1977).

13 75 UNTS 1 *et seq.*

14 Although G. H. Aldrich refers, in "Prospects for U.S. Ratification of Additional Protocol I to the 1949 Geneva Conventions", 85 AJIL 1 (1991), only to a number of essentially political reasons for the Administration's opposition to the Protocol, it would appear from testimony presented to the United States Senate Task Force referred to in note 6 (*c*) above that the Department of Defense objects specifically to the environmental provisions (for example, the statement of Michael J. Matheson, Deputy Legal Adviser, United States Department of State).

15 General Assembly resolution 37/7 of 28 October 1982. See also 22 ILM 455 (1983).

16 75 UNTS 1 *et seq.*

17 1125 UNTS Registration No. 17512, 16 ILM 1391 (1977).

18 205 CTS (Parry) 277, 3 Martens (3rd) 461.

19 187 CTS (Parry) 429, at 438, 26 Martens (2nd) 949, article 22.

20 75 UNTS 287.

21 Indeed, Kuwait has asserted that the destruction of its oil wells by Iraq was not at all the result of the military conflict, but was a deliberate exercise of a "scorched-land" policy that was not designed to gain military advantage (A/45/1035).

22 1125 UNTS Registration No. 17513, 16 ILM 1442 (1977).

23 See *Environmental Hazards of War: Releasing Dangerous Forces in an Industrialized World* (Arthur H. Westing, ed. (published for

PRIO (International Peace Research Institute, Oslo) and UNEP by Sage Publications, 1990).

24 Resolution of 4 September 1976, 57 ILA 234.

25 See, for example, IAEA General Conference resolutions GC(XXVII)/RES/407 of 14 October 1983, GC(XXVIII)/RES/425 of 28 September 1984, GC(XXIX)/RES/444 of 27 September 1985, GC(XXXI)/RES/475 of 25 September 1987, GC(XXXIV)/RES/533 of 21 September 1990.

26 General Assembly resolution 45/58 J of 4 December 1990.

27 Consequent on that request by the General Assembly, the Conference on Disarmament re-established, at its 1991 session, its Ad Hoc Committee on Radiological Weapons, Contact Group B of which considered issues relevant to the prohibition of attacks against nuclear facilities. The text of the Contact Group's report, which consists of proposed drafts of numerous provisions that might be included in a convention on this subject, was communicated to the General Assembly (A/46/556, para. 4, and annex).

28 205 CTS (Parry) 332, 3 Martens (3rd) 580.

29 19 ILM 1529 (1980).

30 General Assembly resolution 37/215 of 20 December 1982.

31 Security Council resolution 686 (1991) of 2 March 1991.

32 A reminder that this is necessary appears in article 29 ("International watercourses and installations in time of armed conflict") of the "Draft Articles on the Law of the Non-Navigational Uses of International Watercourses", which the ILC has just adopted in provisional form (Report of the ILC on its forty-third session, *Official Records of the General Assembly, Forty-sixth Session, Supplement No. 10* (A/46/10), chap. III, "Commentary on article 29", pp. 192-194).

33 These are by no means simple questions to answer. The normal source of international law relevant to these matters, the 1969 Vienna Convention on the Law of Treaties (1155 UNTS 331), is explicitly silent on this point (see article 73), and the question is further complicated by the uncertain legal status of the Gulf "War", which had aspects both of a Security Council enforcement action under Article 42 of the United Nations Charter and of collective self-defence under Article 51, and in which opposing belligerents for the most part did not even break diplomatic relations with each other. For example, it is not clear to what extent any Member of the United Nations could be considered a true "neutral" in view of the actions by all Members that the Security Council ordered or authorized against Iraq. It should be noted that at a consultation of legal experts convened by the ICEL in collaboration with the IUCN-CEL in Munich, 13-15 December 1991, on Law Concerning the Protec-

tion of Environment in Times of Armed Conflict, part I, para. 6 of the Final Recommendations read as follows:

"6. The Group drew attention to the fact that the rules of international environmental law continue to apply between parties to an armed conflict and third parties. It recommended clarification of the extent to which these rules also continue to apply between parties to an armed conflict."

34 United Nations document A/CONF.48/14/Rev.1, chap. I, 11 ILM 1416 (1972).

35 General Assembly resolutions 2994(XXVII), 2995(XXVII) and 2996(XXVII) of 15 December 1972.

36 "10. Natural resources shall not be wasted, but used with a restraint appropriate to the principles set forth in the present Charter, in accordance with the following rules:

"...

"(*d*) Non-renewable resources which are consumed as they are used shall be exploited with restraint, taking into account their abundance, the rational possibilities of converting them for consumption, and the compatibility of their exploitation with the functioning of natural systems.

"11. Activities which might have an impact on nature shall be controlled, ... in particular:

"(*a*) Activities which are likely to cause irreversible damage of nature shall be avoided;

"...

"12. Discharge of pollutants into natural systems shall be avoided ...."

37 As Article 10 of the United Nations Charter gives the General Assembly the power to make recommendations to the Members of the United Nations, it must be assumed that in accepting the Charter these States, while not undertaking to be bound by such recommendations, agreed at least to give due consideration to them.

38 United Nations document A/CONF.62/122; *The Law of the Sea* (United Nations publication, Sales No. E.83.V.5); 21 ILM 1261 (1982).

39 Some of the here most relevant provisions of the Convention are the following:

"*Article 192*

"*General obligation*

States have an obligation to protect and preserve the marine environment.

"*Article 194*

"*Measures to prevent, reduce and control pollution of the marine environment*

"1. States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source . . .

"2. States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention.

"3. The measures taken pursuant to this Part shall deal with all sources of pollution of the marine environment. These measures shall include, *inter alia*, those designed to minimize to the fullest possible extent:

"(*a*) the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources . . .

"(*b*) pollution from vessels . . .

"(*c*) pollution from installations and devices used in exploration or exploitation of the natural resources of the sea-bed and subsoil . . .

". . ."

40 327 UNTS 3, 12 UST 2989, TIAS 4900.

41 12 ILM 1319 (1973), 17 ILM 546 (1978).

42 973 UNTS 3, 9 ILM 45 (1970).

43 1110 UNTS 57, 11 ILM 284 (1972).

44 30 ILM 735 (1991).

45 1140 UNTS 133, 17 ILM 511 (1978).

46 Report of the ILC on its twenty-eighth session. *Official Records of the General Assembly, Thirty-first Session, Supplement No. 10* (A/31/10), chap. III.B.1, para. 78, at 175, reproduced *in* 1976: II ILCYB 95-96.

47 Report of the ILC on its forty-second session. *Official Records of the General Assembly, Forty-fifth Session, Supplement No. 10* (A/45/10), chap. VII, paras. 515-516, at 274-277. In his report to the Commission at its forty-third session (1991), the Rapporteur proposed some restructuring of the provisions quoted below, but without any substantive changes (A/CN.4/437, paras. 59 and 61).

48 At its forty-third session (1991), the Commission discussed in very general terms, under the topic "International Liability for Injurious Consequences . . .", its Rapporteur's proposals in respect of environmental harm, but no consensus appears to have emerged yet as to how this question should be addressed (Report of the ILC on its forty-third session. *Official Records of the General Assembly, Forty-sixth Session, Supplement No. 10* (A/46/10), chap. V, *passim*).

49 Security Council resolution 687 (1991) of 3 April 1991; 30 ILM 847.

50 Letter of 6 April 1991, Security Council document S/22456.

51 Report of the ILC on its forty-third session. *Official Records of the General Assembly, Forty-sixth Session, Supplement No. 10* (A/46/10), chap. IV.D.1, reproduced in 30 ILM 1584 (1991).

52 For the Commission's explanation of this draft article, see *ibid.*, chap. IV, D, 1, para. 9 of the commentary on article 22.

53 For the Commission's explanation of this draft article, see *ibid.*, paras. 1 to 6 of the commentary on article 26.

54 For other studies that set out proposals on this subject, see:

a Jozef Goldblat, "Legal Protection of the Environment against the Effects of Military Activities", 22 Bulletin of Peace Proposals (4 December 1991);

b Part II of the Final Recommendations of the ICEL/IUCN-CEL consultation of legal experts referred to at the end of note 33 above.

c Report on the "Environmental Aftermath of the Gulf War" by the [U.S.] Senate Committee on Environment and Public Works: Gulf Pollution Task Force, Executive Summary and Recommendations (March 5, 1992), pp. 4-5 ("International Legal Issues"), supported by the Report of the Task Force prepared by the Congressional Research Service (March 4, 1992);

d Recommendation for UNCED Working Group III on "Institution & Legal Measures Relevant to Armed Conflict and Sustainable Development", submitted by IUCN to the UNCED Preparatory Commission on 12 March 1992.

55 Article II, paragraph 4, of Protocol III (19 ILM 1534 (1980)) states that "it is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons".

56 It should be noted that environmental impact assessment has become well-established in international environmental regimes; see, for example, the OECD Council Recommendation on Assessment of Projects with Significant Impact on the Environment, 8 May 1979, OECD C(79) 116; EEC Council Directive on Assessment of the Effects of Certain Public and Private Projects on the Environment, 27 June 1985, Dir. No. 85/337, OJEC 1985 L 175/40; UNEP Governing Council Decision on Goals and Principles of Environmental Impact Assessment, 17 June 1987, UNEP/GC/DEC/14/25; Espoo [Finland] Convention on Environmental Impact Assessment in a Transboundary Context, 15 February 1991, ECE document, 30

ILM 802 (1991). Of particular relevance is article 36 of Additional Protocol I of 1977, which reads as follows:

"In the study, development, acquisition or adoption of a new weapon", means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party."

57 The General Assembly of the United Nations has recently asked the International Law Commission to look once again at the question of the feasibility of establishing an international criminal court (resolutions 44/39 of 4 December 1989 and 46/54 of 9 December 1991, para. 3). Even in the absence of such a court, those accused of international crimes can (as is now provided in respect of a number of international crimes, such as terrorism or hostage taking, and as would be provided in article 6 of the Draft Code of Crimes (see note 51 above)) be made subject to prosecution in the courts of any affected State, and/or it can be provided that those accused of such crimes must either be prosecuted in any State in which they may be found or be extradited by such State to any other that wishes to prosecute.

58 For additional details concerning the provisions that might be included in such a treaty, see the author's written report referred to in paragraph (*b*) (i) of note 6 above. There are, of course, other possible approaches that might be taken to the negotiation of such a treaty. See for example, G. Plant, "Elements of a 'Fifth Geneva' Convention on the Protection of the Environment in Time of Armed Conflict", prepared for the June 1991 Round-table Conference referred to in paragraph (*d*) of note 2 above, which study explores the possibility of adapting the format of Additional Protocol I, a primarily humanitarian law instrument, into one specifically for the protection of the environment.

59 A/C.6/46/SR.18-20 (22-24 October 1991).

60 General Assembly decision 46/417 of 9 December 1991.

# Open Skies

## Open Skies: Then and Now

Ron Cleminson

### Introduction

The rapid evolution of events, particularly in Europe, has created a new climate within which the future of the arms limitation and disarmament process is likely to be fashioned. The ability and the means of verifying compliance, a significant element of that process, cannot help but be affected by these dramatic events. Nowhere is this more evident than in the evolution of the Open Skies concept. Initially proposed by President Eisenhower in 1955, and revisited by President Bush in 1989, Open Skies is now reaching the final negotiating stage.

The Eisenhower proposal was indeed, for its day, revolutionary in concept—so much so that it seemed that it was rejected at the outset because of the penchant on the part of the USSR for secrecy. In those days, verification was characterized by the USSR as "legalized espionage". Today, of course, that cloak of secrecy has long since been penetrated by satellite sensing.

Perhaps the most noteworthy aspect of the Open Skies proposal when it was put forward by President Bush was its almost immediate acceptance, in principle, by the Soviet Union. The Bush proposal expanded upon Eisenhower's earlier suggestion in terms of concept, geographical area and

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membership, throwing open for virtually unrestricted aerial surveillance all of the territories of North America, Europe and the Soviet Union. The significance of the proposal, which is not tied to any particular disarmament treaty scenario, lies far more in its confidence-building potential than in the capabilities of the verification systems to be employed.

### The Eisenhower Proposal

President Eisenhower's proposal, apparently like that of President Bush some 34 years later, was the product of the White House apparatus rather than of the wider Administration. A panel of experts, convened by Nelson Rockefeller, then Special Assistant to the President, undertook to generate some innovative ideas which might be considered by the United States for use at the 1955 Geneva Conference of Heads of Government. To some degree, the Open Skies proposal was seen as a means of testing the seriousness of the Soviet Union on disarmament. The idea of mutual aerial inspection seemed to be a good test for determining the willingness on the part of the USSR to accept intrusive inspection. Speaking in Geneva on 21 July 1955, partly from notes and partly "off the cuff", President Eisenhower outlined the core of the Open Skies proposal in a number of steps. He said:

> "These steps would include: to give each other a complete blueprint of our military establishments, from beginning to end, from one end of our countries to the other; lay out the establishments and provide the blueprints to each other. Next, to provide within our countries facilities for aerial photography to the other country—we to provide you the facilities within our country, ample facilities for aerial reconnaissance, where you can make all the pictures you choose and take them to your own country to study, you to provide exactly the same facilities for us. . . ."[1]

As Mr. Eisenhower later recorded in his memoirs, the

Soviet side assessed the proposal to be "nothing more than a bald espionage plot against the USSR".[2] It was clear that the Soviet Union's suspicions, which are well documented in the annals of United Nations arms limitation and disarmament negotiations, precluded the use of intrusive methods of verification. The Open Skies concept continued a tortuous round of negotiations through the late 1950s, but to no avail. The shooting down of a United States reconnaissance aircraft over the Soviet Union on 1 May 1960 and the advent of an effective space-based reconnaissance capability on both sides hastened its demise. In the latter event, the ability to gain information without the use of intrusive means satisfied the national security requirements of the super-Powers. It also made overhead reconnaissance the exclusive purview of the space Powers for the following quarter of a century.

## The Interim Period

For more than 30 years relatively little attention was focused on the use of aircraft in a strategic sense as a method for overhead reconnaissance for arms control purposes.[3] In September 1986, this general pattern began to change with the signing of the Document of the Stockholm Conference on Confidence- and Security-building Measures and Disarmament in Europe. Termed the Stockholm Document, the agreement provided for a system of monitoring and observation of military activities in Europe using a combination of aerial and ground inspection measures. Although not seen initially as a breakthrough in terms of airborne surveillance for disarmament verification purposes, the agreement by the 35 members of the Stockholm negotiations (particularly by the USSR) to the following four provisions of the Stockholm Document (paragraphs 89-92) in retrospect proved to be a significant turning-point:

> "(89) The inspecting State will specify whether aerial inspection will be conducted using an airplane, a

helicopter or both. Aircraft for inspection will be chosen by mutual agreement between the inspecting and receiving States. Aircraft will be chosen which provide the inspection team a continuous view of the ground during the inspection.

"(90) After the flight plan, specifying, *inter alia*, the inspection team's choice of flight path, speed and altitude in the specified area, has been filed with the competent air traffic control authority the inspection aircraft will be permitted to enter the specified area without delay. Within the specified area, the inspection team will, at its request, be permitted to deviate from the approved flight plan to make specific observations provided such deviation is consistent with paragraph (74) as well as flight safety and air traffic requirements. Directions to the crew will be given through a representative of the receiving State on board the aircraft involved in the inspection.

"(91) One member of the inspection team will be permitted, if such a request is made, at any time to observe data on navigational equipment of the aircraft and to have access to maps and charts used by the flight crew for the purpose of determining the exact location of the aircraft during the inspection flight.

"(92) Aerial and ground inspectors may return to the specified area as often as desired within the 48-hour inspection period."[4]

Between the termination of the Stockholm Conference in September 1986 and the opening of the Vienna negotiations on conventional arms reductions in March 1989, the Soviet Union drastically revised its approach to disarmament verification. On 9 March 1989, Foreign Minister Shevardnadze, in his address to the official opening conference of the Open Skies negotiations, summarized the Soviet approach by stat-

ing that there was no verification method the USSR would not accept, given reciprocity.

## The Bush Proposal

At Texas Agricultural and Mechanical (A&M) University, on 12 May 1989, President Bush spoke of President Eisenhower's suggestion as a test of Soviet readiness to open its society. He suggested exploring the proposal once again "but on a broader, more intrusive and radical basis".

The new Open Skies proposal which was elaborated subsequently by President Bush in Brussels, and which was endorsed in the communiqué of the North Atlantic Treaty Organization (NATO) of 30 May 1989, constitutes a dramatic variant of the initial Eisenhower ideas. If agreed to, it would have the effect of opening the territory of North America, Europe and the Soviet Union to virtually unrestricted aerial surveillance. The theme of this initiative would be "openness" and "transparency" rather than "inspection" *per se*. The overflights would intentionally not be related to any specific disarmament treaty (such as the Treaty on Conventional Armed Forces in Europe (CFE) and the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START)). The major benefit of the regime would likely derive more from the confidence-building dimension than from any treaty-related verification benefits which might be forthcoming.

The basic principle would be that participating nations would open their skies to regular unarmed, non-combat type aerial surveillance flights. While Soviet participation would be essential, the ultimate objective would be a regime founded on an agreement among the countries which chose to participate. The initial intention was that these countries would be from both NATO and the Warsaw Treaty Organization (WTO), but there is growing recognition that all European nations will eventually be able to participate in the regime.

## The Negotiations

Throughout the summer and autumn of 1989, representatives of the States members of NATO and the WTO met separately to develop common positions on the structure of an eventual Open Skies regime. Although at least one negotiator characterized Open Skies at the outset as being "doomed to succeed", it became apparent that tough negotiations would be required. On the one side, it was becoming increasingly apparent that, although meant as a confidence-building mechanism, Open Skies flights could be useful in checking on treaty-limited equipment (TLE) which might be moved outside of the Atlantic-to-the-Urals (ATTU) area as a result of the CFE Treaty. A welcome, but complicating, factor was the increasingly independent positions developed by members of the Warsaw Pact as its decision-making mechanism evolved. Only recently have the requirements arising from newly emerging States within the ATTU area been addressed.

On 24 September 1989, in order to kick-start the negotiation, Prime Minister Mulroney announced that Canada had offered to host the first stage of an international conference to develop the Open Skies regime, with the second stage to be held in Budapest, Hungary, in the spring of 1990, at which it was hoped the treaty would be completed and signed.

The Open Skies Conference was duly opened in Ottawa by the Prime Minister of Canada on 12 February 1990. Foreign ministers of the 23 NATO and WTO member States attended the ministerial part of the Conference. The Budapest phase of the Open Skies Conference began on 23 April 1990 and concluded on 12 May, though without any final agreement. A third round was held in Vienna in the spring of 1991, likewise without success. As a result, the negotiations were suspended until some possibility for compromise could be identified.

Generally, throughout the initial three sets of negotiations NATO favoured a regime that would be open to the

greatest extent possible, without any limitation other than that required for flight safety. Issues on which NATO countries held firm involved keeping overflight restrictions to an absolute minimum, allowing sophisticated "all-weather" sensors, and raising the number of overflight quotas to a significant level.

The WTO position reflected a different conceptual approach to Open Skies. The Soviet Union, in particular, insisted upon a common fleet of aircraft, with a universally available pool of data resulting from each overflight. The Soviet position (not shared by all WTO States) on permitted sensors attempted to reduce the remote-sensing capability of Open Skies aircraft below that considered by NATO countries to be sufficient to allow 24-hour/all-weather coverage. It similarly restricted both the number and the duration of annual overflights of Soviet territory to a bare minimum.

The dissolution of the Warsaw Pact as a cohesive decision-making entity, and the continuing evolution in the Soviet Union's approach to permitted sensors and aircraft ownership, led to a decision to resume negotiations in Vienna in the autumn of 1991.

Within the first hour of the re-commencement of the Open Skies talks in Vienna on 5 November 1991, it seemed clear to all concerned that the new goal of a completed negotiation before the start of the Helsinki CSCE follow-up meeting in March 1992 was realistic and attainable.

After a year-end break, negotiators returned to Vienna on 13 January 1992 for what was intended to be a final push. The goal of achieving the Helsinki time-frame, though difficult, was still attainable. The dissolution of the Soviet Union, of course, raises a myriad of questions, and creates both opportunities and uncertainties. On the positive side, the emergence of Russia meant that there was now a clear successor State negotiating for the bulk of what was once the USSR, a fact which remained the key to any meaningful agreement.

Remarkably, a proposal first put forward at the height of the cold war now appears about to become a reality.

### Trial Overflights

What has been unique and innovative in terms of the most recent Open Skies experience is that while negotiations have continued intermittently, practical experience has been gained through the exercising of tentative procedures under field conditions.

In collaboration with the Hungarian Government late in 1989, Canada agreed to conduct a trial Open Skies overflight of Hungary. The objective of the trial was to gain practical experience about the administrative and operational procedures expected to be necessary for an Open Skies regime. The exercise was arranged on a reciprocal basis, with Hungary having the option to conduct its own trial overflight over Canadian territory.

On 4 January 1990, a Canadian Forces C-130 "Hercules" aircraft arrived in Hungary to conduct the overflight. While *en route*, the Canadian aircraft transited Czechoslovak airspace. Flight clearances were provided for the transit at short notice by Czechoslovak authorities. The overflight itself took place on the morning of 6 January 1990. Since the trial flight was intended to test procedures, it was felt that the aim could be accomplished *without prejudice* to the issues that were still under discussion by interested nations.

While every effort was made to ensure that this overflight reflected as closely as possible the air traffic control procedures that might be agreed to in an Open Skies treaty, it was recognized that the greatest lessons would be derived from the flight if extra time were taken at each stage of the process to evaluate each activity immediately. Thus, the periods devoted to notification, flight planning time, and the total time elapsed between initial notification and the actual overflight were slightly longer than the corresponding periods that

might be agreed to in the eventual treaty. Perhaps the most important difference between this first trial overflight and an actual Open Skies overflight was the fact that the Canadian aircraft carried no on-board sensors, apart of course from standard navigation systems. No optical devices were operated during the overflight in a way that would provide images from outside the aircraft. The aircraft was therefore incapable of accumulating any data on Hungarian activities.

In January 1992, Hungary took up the option of conducting a trial overflight in Canada using aircraft and sensors under a more technically oriented programme. Building upon the results of the initial overflight of Hungary, the programme for the second trial overflight was designed to include the use of sophisticated sensors.

The aim of the second trial overflight, which included a sensor- equipped aircraft to simulate a designated overflight as well as an additional orientation/familiarization flight for observers, was to help the negotiations by demonstrating some of the sensor capabilities and limitations, and by simulating the exchange of flight-recorded data. The first flight, using a CC115 "Buffalo" aircraft, provided a unique opportunity to test some operational procedures still under negotiation in Vienna. On the following day, the sensor-equipped aircraft used both synthetic aperture radar (SAR) and optical camera sensing as envisioned in the negotiations. The trial overflights were preceded by a two-day programme of briefings, technical discussions and demonstrations that helped set the stage. This programme provided the opportunity for representatives from both countries to exchange views and further develop their mutual understanding on the technical requirements of Open Skies missions. Subjects discussed and briefed were:

a Synthetic aperture radar (SAR);
b Aerial photography;
c Mission planning; and

d Sensor development and aircraft modification engineering.

The orientation/familiarization flight followed the same routing as the sensor flight of the next day and allowed for visual observation and recognition of the sensor targets. A total of 14 observers from the two countries participated. This flight also tested the notification and clearance procedures for restricted areas. The aircraft overflew Canadian Forces Air Base Trenton, Canadian Forces Army Base Petawawa, two commercial nuclear power plants and a major industrial automobile manufacturing facility in Oshawa.

The second flight was carried out using a sensor-equipped Convair 580 aircraft operated by the Canada Centre for Remote Sensing. Sensors included:

a CCRS Synthetic Aperture Radar (C-band with a 6-metre resolution);

b Fixed optical camera (RC10 with a 152-millimetre focal length lens);

c Low Light Level TV (RCA TC 1030/H); and

d Standard colour video camera.

The aircraft carried 5 CCRS crew members consisting of 2 pilots, 1 mission manager and 2 sensor specialists. Flight representatives included 1 cockpit/navigation observer from Hungary, and 2 Hungarian and 1 Canadian sensor specialists as observers.[5]

Among the initial conclusions reached as a result of the trial flights are the following:

*Resolution*:

"The resolution presently being proposed in the negotiations limits the effectiveness of the regime. In particular:

"(*a*) 30 centimetre resolution proposed for optical and electro-optical sensors limits aircraft ability to fly under cloud cover; and

"(*b*) 3 metre resolution on SAR imagery pro-

duces a limited amount of information which may be insufficient to justify the high costs involved."

*Navigation*:

"Combination of different types of navigation equipment fitted in the aircraft ensures optimal results. The treaty should allow use of any navigation equipment necessary for exact navigation and processing of sensor data. . . ."

*Cost Effectiveness*:

"The relatively high costs of aircraft and sensors make cooperation highly desirable. Joint flights, leasing of equipment, and reduction of costs by sharing information on a commercial basis are all important ways of making the regime more cost-efficient. The treaty should provide a flexible framework allowing all possible ways of cooperation."

## CFE Aerial/Open Skies Harmonization

As the make-up of the various sets of negotiations continues to evolve, harmonization of a number of aspects will become increasingly more relevant. Under the terms of the CFE Treaty signed in Paris on 19 November 1990, States parties have committed themselves to accept an agreed number of aerial inspections for the verification of residual levels of treaty-limited equipment.[6] Although considerable discussion relating to aerial inspections took place during the period of CFE Treaty negotiations, no consensus was reached concerning the use of aerial imagery for verifying compliance. From the outset, it was clear that imagery acquired for CFE verification purposes would have to be of sufficient resolution to permit recognition of the differences between, for example, a tank and an armoured combat vehicle (ACV). As a result, resolution and scale requirements for CFE aerial inspection purposes could be easily computed.

In contrast to the CFE Treaty, Open Skies, in its initial

concept, focused on "openness" and "transparency" rather than "inspection" and "verification". It was apparent therefore that the level of resolution necessary for Open Skies could be less than that required for CFE verification purposes. Open Skies, seen in the context of "confidence-building", was related more to the monitoring function than to the more comprehensive process of verification. Beyond the ATTU, the value of Open Skies relates to its unique capability to monitor TLE not subject to verification by on-site inspection under the CFE Treaty. The technical requirements of an Open Skies system were not seen, however, to be as demanding as those for CFE Treaty purposes. While a system designed to meet CFE aerial inspection purposes would inherently be able to meet the less restrictive Open Skies requirements, the reverse would not necessarily be true.

Now that a successful Open Skies agreement seems assured prior to the CSCE follow-up meeting in Helsinki, and recognizing the explicit commitment to aerial inspections in the CFE Treaty, the need to harmonize these two concepts and capabilities, in terms of the ATTU, is apparent. It seems likely, therefore, that technical meetings, after the Helsinki meeting in 1992, focusing on concept harmonization and practical application will be essential.

## Conclusion

The Open Skies concept has been transformed from its cold-war origins into a mechanism for coping with the multi-faceted arms limitation and disarmament problems of modern Europe. While it will serve significantly as a confidence-building measure in terms of pan-European security, it will also help strengthen the purposes of the CFE Treaty and could serve as a useful option in terms of reducing regional tension. From the standpoint of the Euro-Atlantic community, it is the only measure encompassing the territory from "Vancouver to Vladivostok". From the global perspective, it could serve as

a model which might, perhaps, be adapted in time to meet concerns in other regions.

**Notes**

1 "Statement by President Eisenhower", *The Geneva Conference of Heads of Government, July 18-23, 1955* (Washington, D.C. Department of State, Publication 6046), p. 21.

2 D. D. Eisenhower, *Mandate for Change* (New York, Doubleday, 1963), p. 521.

3 A notable exception, from the standpoint of arms limitation, was the Sinai disengagement process of the late 1970s and early 1980s, in which American aircraft were employed to monitor compliance with the Accords. See Brian S. Mandell, *The Sinai Experience: Lessons in Multimethod Arms Control Verification and Risk Management*, Arms Control Verification Studies No. 3 (Ottawa, Department of External Affairs, 1987).

4 Document of the Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe Convened in Accordance with the Relevant Provisions of the Concluding Document of the Madrid Meeting of the Conference on Security and Cooperation in Europe (adopted in Stockholm on 19 September 1986). Excerpts are reproduced in *The United Nations Yearbook*, vol. 18: 1988, chapter V, annex.

5 See: *Open Skies Backgrounder No. 5* (Ottawa, External Affairs and International Trade Canada, 1992).

6 Article XIV, paragraph 6, the CFE Treaty. The residual level validation phase should occur 44 months after the entry into force of the Treaty. The text of the Treaty is reproduced in *The United Nations Disarmament Yearbook*, vol. 15: 1990, appendix II (United Nations publication, Sales No. E.91.IX.8).

# A Bilateral Accord that Helped Resume the Open Skies Conference: The Hungarian-Romanian Open Skies Agreement

Marton Krasznai

## History and Political Background

The Open Skies initiative was launched more than three and a half decades ago by United States President Dwight Eisenhower. According to his proposal made in 1955, the United States and the Soviet Union would have voluntarily opened their airspace on a reciprocal basis, permitting overflight of their territory. In May 1989, President George Bush revived the Open Skies concept. He proposed the opening of negotiations between the North Atlantic Treaty Organization (NATO) and the Warsaw Pact with a view to establishing an overflight regime covering the whole territory of all member States, including the United States and Canada. Negotiations towards this end are continuing. On 11 May 1991, Hungary and Romania became the first States ever successfully to negotiate and sign a bilateral Open Skies agreement.

The dramatic changes that had taken place in Europe since the revival of the proposal in May 1989 made this agreement possible and timely. The collapse of the Warsaw Pact also brought about the end of the old European security structure based on an approximate balance of the military

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forces of the two alliances. Great instability became the most dramatic negative side-effect of the profound political changes in Central and Eastern Europe. Earlier arms control agreements have lost much of their relevance in the light of today's political realities. Participants in the various arms control forums have not moved boldly in the current state of flux. The limitations set in the Treaty on Conventional Armed Forces in Europe (CFE) are aimed at redressing the East-West balance but are not very relevant to the new sources of military instability which emerged with the disappearance of the East-West divide.

In this new political and military situation the States of Central and Eastern Europe have a choice: either to re-nationalize their defence policies and return to the pre-war emphasis on military force, which would further destabilize their region, or to start building a new, cooperative security structure. Bilateral confidence- and security-building measures, such as the Hungarian-Romanian Open Skies regime, could play an important role in this new cooperative security structure of Europe.

Hungary has been a devoted and active supporter of the Open Skies concept since President Bush revived it in 1989. At that time an Open Skies regime seemed to be a new and effective way to ease tension and build confidence between the two military blocs. Together with Canada, Hungary volunteered to host the Open Skies Conference. The first round of the Conference took place from 12 to 28 February 1990 in Ottawa, the second round from 20 April to 10 May 1990 in Budapest. At that time the positions of NATO and the Soviet Union were too far apart to be bridged by almost six weeks of intensive negotiations.

Soon after the second round of the Open Skies Conference, Romania proposed to Hungary the initiation of negotiations for a bilateral Open Skies agreement. Hungary did not at that time accept the Romanian offer. As designated host of



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the third round of the Open Skies Conference, it made every effort possible to help bring about the continuation of the multilateral negotiations. Hungary was well aware that a multilateral regime would have several obvious advantages; among others, it could serve as a verification regime for existing and future arms control agreements.

Only in January 1991 did Hungary give a positive answer to the repeated Romanian proposal. By that time it became clear that most participating States were not going to give their consent to the continuation of the Conference unless the Soviet Union indicated clearly that it would remove the stumbling-blocks from the road to the successful conclusion of the negotiations. The decision to begin bilateral Open Skies negotiations did not mean that Hungary had abandoned the idea of a multilateral regime. In 1989, the Hungarian delegation to the negotiations on confidence- and security-building measures in Vienna introduced the concept of "amplified confidence-building measures" in the relations of neighbouring countries. A bilateral Open Skies regime functioning in parallel with a multilateral regime was seen as a good example of the realization of this concept. Furthermore, both countries believed that the creation of a bilateral regime could demonstrate the viability and utility of Open Skies and help convince other participants to continue the Conference.

The signing of an Open Skies agreement between Hungary and Romania had a special political significance. The two countries have, regrettably, a history of strained relations. For three and a half decades their membership in the Warsaw Pact prevented Hungary from properly addressing the problems which the sizeable Hungarian minority living in the territory of Romania were facing. After the disbanding of the Warsaw Pact their situation became a source of tension and open debate between the two countries. The willingness to establish a regime which would ensure a high degree of openness and transparency in their military activities and

serve as an effective tool of confidence- building shows the determination of Hungary and Romania to solve their problems exclusively by negotiations—either bilateral or within the framework of relevant institutions such as the Council of Europe or within the Conference on Security and Co-operation in Europe (CSCE) process.

## Negotiation of the Agreement

The Romanian delegation arrived in Budapest in mid-February 1991. The first round of the negotiations was very intensive and fruitful. The fact that both delegations presented draft agreements based on the draft treaty text of the second round of the Open Skies Conference facilitated matters. The main body of the agreement was worked out in three days. The second round of the negotiations, held at Bucharest in mid-March, was equally intensive and effective. In two and a half days the delegations agreed on all eight annexes to the Agreement.[1]

The Hungarian and Romanian negotiators agreed from the very beginning that the regime to be created should be simple yet effective and should match the technical and financial resources of the two countries. The provisions of the Agreement are therefore flexible and take into account to a great extent the requirement of cost-effectiveness.

According to the quota annex, the two countries have a right to carry out four flights a year in each other's airspace. This flight quota is quite substantial if one takes into account the fact that the bilateral regime will continue functioning after the multilateral Open Skies agreement enters into force. An observation flight is restricted by the following, whichever applies first: a maximum duration of three hours or a maximum distance of 1,200 kilometres. This was calculated on the average speed (400 kilometres/hour) and range (2,000 kilometres) of the designated observation aircraft. A Hungarian observation aircraft using the closer point of entry

(Timisoara) can carry out an observation flight in Romanian airspace and return to Budapest without refuelling. However, if it uses the further point of entry (Bucharest), refuelling is needed.

Both countries intend to use their existing aircraft for the purpose of Open Skies observation flights: Romania will use the Soviet-made medium-size, two-engine turboprop AN-30 (which is a specialized version of the AN-24 transporter, modified for aerial photography), while Hungary will use either the two-engine turboprop AN-26 transporter or the Czechoslovak-made two-engine turboprop L-410, a small multi-purpose plane. The observing party can use its own aircraft or an aircraft of the observed party. The right of choice belongs to the observing party. As both countries have only a few aircraft suitable for Open Skies purposes, the observing party shall submit a request seven days in advance if it intends to use an aircraft of the observed party.

The sensor annex contains only the two sensors Hungary and Romania have at present: aerial cameras and video cameras. This annex can, however, be updated if the parties want to introduce further sensor categories. In view of the possibility of upgrading the sensors, the parties have undertaken the obligation to use similar sensors of comparable capability and to facilitate access to such sensors for use by the other party. The ground resolution of the sensors is not limited. This flexibility allows the pilot of the observation aircraft to fly as low as flight safety requirements permit.[2] Low-level flights might be necessary in cloudy weather, when the only way to take photographs is to fly under the cloud cover.

Request for an overflight shall be submitted 24 hours in advance and shall be accepted promptly, unless *force majeure* prevents the party to be overflown from receiving the observation aircraft. The Agreement guarantees that overflights will be as unrestricted as possible. Hazardous airspace

must be publicly announced in the aeronautical information publication. If the observed party requests overflight of hazardous airspace, such as airspace over nuclear-power stations, chemical plants or exercise grounds where a firing exercise is going on, the observed party may specify the minimum safe altitude, may propose an alternate flight route as near to the hazardous airspace as safety requirements permit, or may propose a change in the time when the aircraft is to arrive in the hazardous airspace.

The observed party has the right to inspect the aircraft and its sensors. According to the Agreement, this pre-flight inspection may last no longer than eight daylight hours and shall terminate no later than three hours prior to the actual commencement of the observation flight. This time-frame was agreed with the intention of ensuring that the observation aircraft would have to spend no more than two days on the territory of the observed party. If the aircraft arrives in the observed country in the morning, the inspection is to be finished by night, the observation flight is to take place the next morning, and the processing of observation materials is to be completed in the afternoon of the second day.

Information-sharing is ensured by the use of double cameras. The two rolls of film are developed by a joint team of the two parties at the end of the observation flight in an established ground facility of the observed party. One negative is taken home by the observing party while the other remains with the party which has been overflown. If no double camera is available, the negative is copied and the copy is taken home by the party which carried out the observation flight. The same applies to video cameras.

The Agreement establishes a Hungarian-Romanian Open Skies Consultative Commission. The Commission's task is to solve any dispute which may arise in the course of the implementation of the Agreement. The Commission is also responsible for updating the following annexes: on sen-

sors, on flight quotas and on entry and exit points.[3] In the hypothetical case that a party discovers, as a result of an overflight, disturbing or unusual military activity on the territory of the other party, the issue may also be raised in the Commission.

### The Demonstration Flight

Hungary and Romania carried out a demonstration flight on 29 June 1991. Representatives of all countries participating in the Open Skies Conference were invited to take part as observers in the trial flight. The purpose of the flight was manifold: to demonstrate to other participants of the Open Skies Conference the viability and utility of Open Skies, to take advantage of the confidence-building potential of bilateral overflights even before the Agreement entered into force,[4] and to test in practice the solutions to various technical problems which were worked out in the course of the negotiations.

Before the Agreement was signed, France had offered technical assistance to both countries. France provided Hungary and Romania with double cameras and automated film-developing machines. A French team of technicians was sent to Budapest and Bucharest to install the cameras and the apparatus and to train local personnel in their use.

The Romanian AN-30 aircraft arrived at Tokol military airport outside Budapest on 28 June. Hungarian officials accompanied by Romanian escorts inspected the aircraft to make certain there were no hidden sensors on board the aircraft. The inspection team divided itself into three subteams: one subteam inspected the fuselage, the second group the avionics, the third group the sensor, a French-made OMERA-33 aerial camera.[5] The team was able to check the aircraft thoroughly in less than three hours because of the fact that the Hungarian air force had used this type of aircraft for decades. After completion of the inspection the aircraft took off for a short flight to calibrate and check the sensor. When

the inspection and the test-flight were over, the Romanian crew filed a flight plan and the Hungarian officials approved it. Before the aircraft took off the next morning, Hungarian officials briefed the Romanian crew on expected weather conditions and flight safety and navigation regulations.

The Romanian AN-30 aircraft took off at 8 a.m. on 29 June. The observers followed the observation aircraft on board an AN-24 transporter flown by the Hungarian air force. Following the flight plan, the observation aircraft flew over various militarily significant objects: a civilian airport, a military college with heavy armament openly displayed for this occasion, an abandoned Soviet military airport and an exercise ground. After a short technical landing on Romanian soil, the demonstration flight was continued over Romania. There the observation plane flew over a military airfield, a training ground, an ammunition depot and a railroad junction.

Weather over Hungary was fair, with a cloud base at 2,000 to 3,000 metres. The plane therefore flew at an altitude of 1,500 metres. Photographs taken from this altitude had a ground resolution of 10 to 15 centimetres. The weather over Romania was poor: it rained and the cloud base at some places was at 400 metres. The aircraft therefore had to fly as low as 200 to 250 metres. The crew of the observation aircraft decided to take the risk of low-level flight because of the desire on the part of both countries to have a successful demonstration. Photographs taken at this altitude had a ground resolution of 2 to 3 centimetres. Navigation proved to be a much more serious problem than either side had expected. The obsolete navigation equipment of the aircraft, the absence of detailed charts of the sites to be overflown and the lack of an electronic pointing device for the camera were to blame for the problems. The observation aircraft had to fly over some sites twice or even three or four times to take a good photograph. These repeated passes would have been impossible during a "real"

observation flight, as the agreement prohibits loitering over the same site.

After completion of the observation flight, the aircraft landed at Otopeny airport in Bucharest. A joint team of Hungarian and Romanian technicians developed the films (for reasons of easy development, only black and white film was used). They were able to produce a few prints as well. The quality of some of the pictures was not satisfactory because of the adverse weather conditions and a slight malfunctioning of the focusing mechanism of the camera. Observers were briefed on the results of the demonstration flight in Budapest.

## Conclusions

The most important conclusion drawn from the bilateral flight was that two countries with modest technical and financial resources can create and operate a relatively effective Open Skies regime. Both the Hungarian and the Romanian air forces have to perform regular training flights, and some of these flights will be used for Open Skies purposes. In this way the costs of observation flights can be kept to a minimum.

Simple and not very expensive sensors—such as aerial cameras—can be used under various meteorological conditions, provided that the terms of the agreement are flexible enough. At the same time, participation in a multilateral Open Skies regime offers several technical advantages compared to a bilateral regime. Larger, technically more developed countries could provide smaller countries with aircraft equipped with sophisticated sensors with an all-weather, day-and-night capability. In this way, smaller countries could carry out observation flights at night or under adverse weather conditions as well. This would increase the technical efficiency and political utility of the regime.

The demonstration flight proved fully the excellent confidence-building potential of Open Skies. The preparation and carrying out of an observation flight requires a high degree

of cooperation and real teamwork on the part of the officials involved. This in itself is a confidence-building exercise. Short-notice overflights are tangible proof, not only for the military of Hungary and Romania but also for the average person, of the considerable degree of confidence between the two countries. The confidence strengthened by these flights can contribute to the solution of bilateral problems.

The signing of the bilateral Agreement and the carrying out of the demonstration flight facilitated efforts to bring about the continuation of the Open Skies Conference. Technical experience gained during the demonstration flight was used extensively by the Hungarian delegation in preparation for the third round of the Open Skies Conference. The Hungarian-Romanian bilateral regime, functioning in parallel with the future multilateral Open Skies regime, served as an example when delegations in Vienna, where the third round of the Open Skies Conference began in November 1991, discussed the possibility of an additional number of overflights between neighbouring countries. Within the framework of a multilateral Open Skies regime, countries have the right—for obvious political and financial reasons—to perform and the obligation to receive only a limited number of overflights. Neighbouring countries may need to overfly each other's territory more often—especially in cases of tension. A multilateral regime is much more useful if it allows neighbours to overfly each other's territory whenever there is tension in their bilateral relations or perceived unusual military activity on the territory of one party.

Open Skies overflights—even more than on-site inspections within the framework of arms control agreements—can help Central and Eastern European countries to accustom themselves to voluntary cooperation in matters of military security. Unlike Western countries, these States have very limited experience in free and democratic cooperation. The acceptance of regular, short-notice overflights of any of

their military installations may make it easier for them to accept a helping hand from the community of CSCE nations in case of tension or crisis.

Last but not least, bilateral and multilateral Open Skies regimes in Europe and North America can serve as an example for other continents. Regions of tension—such as the Middle East and the Korean peninsula—also could take advantage of this new and highly effective confidence-building tool.

**Notes**

1 The complete text of the Agreement was issued as a United Nations document, A/46/188-S/22638, annex, and was published in *Disarmament*, vol. XIV, No. 4, 1991.

2 The ground resolution of an aerial camera or a video camera depends on its focal length and the altitude of the aircraft. If there is an upper limit for the ground resolution, it might force the aircraft not to fly lower than a certain minimum altitude.

3 Entry and exit points are those airfields in the territory of the parties that are designated for the arrival and departure of the observation aircraft of the other party.

4 There was extensive media coverage of the event in both countries.

5 This type of double camera has a focal length of 200 mm.

# Documentation Relating to Disarmament

## Excerpts from the Final Act of the Paris Conference on Cambodia*

Paris, 23 October 1991

1 Concerned by the tragic conflict and continuing bloodshed in Cambodia, the Paris Conference on Cambodia was convened, at the invitation of the Government of the French Republic, in order to achieve an internationally guaranteed comprehensive settlement which would restore peace to that country. The Conference was held in two sessions, the first from 30 July to 30 August 1989, and the second from 21 to 23 October 1991.

. . .

10 At the second session, the Conference adopted the following instruments:

1. *Agreement on a Comprehensive Political Settlement of the Cambodia Conflict*, with annexes on the mandate for UNTAC, military matters, elections, repatriation of Cambodian refugees and displaced persons, and the principles for a new Cambodian constitution;
2. *Agreement Concerning the Sovereignty, Independence, Territorial Integrity and Inviolability, Neutrality and National Unity of Cambodia*; and
3. *Declaration on the Rehabilitation and Reconstruction of Cambodia.*

. . .

II *Agreement on a Comprehensive Political Settlement of the Cambodia Conflict*

The States participating in the Paris Conference on Cambodia, namely Australia, Brunei Darussalam, Cambodia, Canada, the People's Republic of China, the French Republic, the Republic of India, the Republic of Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, the Republic of the Philippines, the Republic of Singapore, the Kingdom of Thailand, the Union of Soviet Socialist Republics, the United Kingdom of

*A/46/608-S/23177, annex.

Great Britain and Northern Ireland, the United States of America, the Socialist Republic of Vietnam and the Socialist Federal Republic of Yugoslavia,

In the presence of the Secretary-General of the United Nations,

*In order* to maintain, preserve and defend the sovereignty, independence, territorial integrity and inviolability, neutrality and national unity of Cambodia,

*Desiring* to restore and maintain peace in Cambodia, to promote national reconciliation and to ensure the exercise of the right to self-determination of the Cambodian people through free and fair elections,

*Convinced* that only a comprehensive political settlement to the Cambodia conflict will be just and durable and will contribute to regional and international peace and security,

*Welcoming* the Framework document of 28 August 1990, which was accepted by the Cambodian Parties in its entirety as the basis for settling the Cambodia conflict, and which was subsequently unanimously endorsed by Security Council resolution 668 (1990) of 20 September 1990 and General Assembly resolution 45/3 of 15 October 1990,

*Noting* the formation in Jakarta on 10 September 1990 of the Supreme National Council of Cambodia as the unique legitimate body and source of authority in Cambodia in which, throughout the transitional period, national sovereignty and unity are enshrined, and which represents Cambodia externally,

*Welcoming* the unanimous election, in Beijing on 17 July 1991, of H.R.H. Prince NORODOM SIHANOUK as the President of the Supreme National Council,

*Recognizing* that an enhanced United Nations role requires the establishment of a United Nations Transitional Authority in Cambodia (UNTAC) with civilian and military components, which will act with full respect for the national sovereignty of Cambodia,

*Noting* the statements made at the conclusion of the meetings held in Jakarta on 9-10 September 1990, in Paris on 21-23 December 1990, in Pattaya on 24-26 June 1991, in Beijing on 16-17 July 1991, in Pattaya on 26-29 August 1991, and also the meetings held in Jakarta on 4-6 June 1991 and in New York on 19 September 1991,

*Welcoming* United Nations Security Council resolution 717 (1991) of 16 October 1991 on Cambodia,

*Recognizing* that Cambodia's tragic recent history requires special measures to assure protection of human rights, and the non-return to the policies and practices of the past,

*Have agreed* as follows:

. . .

**Annex 1**
**UNTAC mandate**

. . .

Section C. *Military functions*

1 UNTAC will supervise, monitor and verify the withdrawal of foreign forces, the cease-fire and related measures in accordance with annex 2, including:

a Verification of the withdrawal from Cambodia of all categories of foreign forces, advisers and military personnel and their weapons, ammunition and equipment, and their non-return to Cambodia;

b Liaison with neighbouring Governments over any developments in or near their territory that could endanger the implementation of this Agreement;

c Monitoring the cessation of outside military assistance to all Cambodian Parties;

d Locating and confiscating caches of weapons and military supplies throughout the country;

e Assisting with clearing mines and undertaking training programmes in mine clearance and a mine awareness programme among the Cambodian people.

2 UNTAC will supervise the regrouping and relocating of all forces to specifically designated cantonment areas on the basis of an operational time-table to be agreed upon, in accordance with annex 2.

3 As the forces enter the cantonments, UNTAC will initiate the process of arms control and reduction specified in annex 2.

4 UNTAC will take necessary steps regarding the phased process of demobilization of the military forces of the parties, in accordance with annex 2.

5 UNTAC will assist, as necessary, the International Committee of the Red Cross in the release of all prisoners of war and civilian internees.

. . .

## Annex 2
## Withdrawal, cease-fire and related measures

Article I
Cease-fire

1 All Cambodian Parties (hereinafter referred to as "the Parties") agree to observe a comprehensive cease-fire on land and water and in the air. This cease-fire will be implemented in two phases. During the first phase, the cease-fire will be observed with the assistance of the Secretary-General of the United Nations through his good offices. During the second phase, which should commence as soon as possible, the cease-fire will be supervised, monitored and verified by UNTAC. The commander of the military component of UNTAC, in consultation with the Parties, shall determine the exact time and date at which the second phase will commence. This date will be set at least four weeks in advance of its coming into effect.

2 The Parties undertake that, upon the signing of this Agreement, they will observe a cease-fire and will order their armed forces immediately to disengage and refrain from all hostilities and any deployment, movement or action that would extend the territory they control or that might lead to a resumption of fighting, pending the commencement of the second phase. "Forces" are agreed to include all regular, provincial, district, paramilitary, and other auxiliary forces. During the first phase, the Secretary-General of the United Nations will provide his good offices to the Parties to assist them in its observance. The Parties undertake to co-operate with the Secretary-General or his representatives in the exercise of his good offices in this regard.

3 The Parties agree that, immediately upon the signing of this Agreement, the following information will be provided to the United Nations:

a Total strength of their forces, organization, precise number and location of deployments inside and outside Cambodia. The deployment will be depicted on a map marked with locations of all troop positions, occupied or unoccupied, including staging camps, supply bases and supply routes;

b Comprehensive lists of arms, ammunition and equipment held by their forces, and the exact locations at which those arms, ammunition and equipment are deployed;

c Detailed record of their mine-fields, including types and characteristics of mines laid and information of booby traps used by them together with any information available to them about mine-fields laid or booby traps used by the other Parties;

d Total strength of their police forces, organization, precise numbers and locations of deployments, as well as comprehensive lists of their arms,

ammunition and equipment, and the exact locations at which those arms, ammunition and equipment are deployed.

4 Immediately upon his arrival in Cambodia, and not later than four weeks before the beginning of the second phase, the Commander of the military component of UNTAC will, in consultation with the Parties, finalize UNTAC's plan for the regroupment and cantonment of the forces of the Parties and for the storage of their arms, ammunition and equipment, in accordance with Article III of this annex. This plan will include the designation of regroupment and cantonment areas, as well as an agreed timetable. The cantonment areas will be established at battalion size or larger.

5 The Parties agree to take steps to inform their forces at least two weeks before the beginning of the second phase, using all possible means of communication, about the agreed date and time of the beginning of the second phase, about the agreed plan for the regroupment and cantonment of their forces and for the storage of their arms, ammunition and equipment and, in particular, about the exact locations of the regroupment areas to which their forces are to report. Such information will continue to be disseminated for a period of four weeks after the beginning of the second phase.

6 The Parties shall scrupulously observe the cease-fire and will not resume any hostilities by land, water or air. The commanders of their armed forces will ensure that all troops under their command remain on their respective positions, pending their movement to the designated regroupment areas, and refrain from all hostilities and from any deployment or movement or action which would extend the territory they control or which might lead to a resumption of fighting.

Article II

Liaison system and Mixed Military Working Group

A Mixed Military Working Group (MMWG) will be established with a view to resolving any problems that may arise in the observance of the cease-fire. It will be chaired by the most senior United Nations military officer in Cambodia or his representative. Each Party agrees to designate an officer of the rank of brigadier or equivalent to serve on the MMWG. Its composition, method of operation and meeting places will be determined by the most senior United Nations military officer in consultation with the Parties. Similar liaison arrangements will be made at lower military command levels to resolve practical problems on the ground.

Article III

Regroupment and cantonment of the forces of the Parties and storage of their arms, ammunition and equipment

1 In accordance with the operational timetable referred to in paragraph 4 of article I of the present annex, all forces of the Parties that are not already in designated cantonment areas will report to designated regroupment areas, which will be established and operated by the military component of UNTAC. These regroupment areas will be established and operational not later than one week prior to the date of the beginning of the second phase. The Parties agree to arrange for all their forces, with all their arms, ammunition and equipment, to report to regroupment areas within two weeks after the beginning of the second phase. All personnel who have reported to the regroupment areas will thereafter be escorted by personnel of the military component of UNTAC, with their arms, ammunition and equipment, to designated cantonment areas. All Parties agree to ensure that personnel reporting to the regroupment areas will be able to do so in full safety and without any hindrance.

2 On the basis of the information provided in accordance with paragraph 3 of article I of the present annex, UNTAC will confirm that the regroupment and cantonment processes have been completed in accordance with the plan referred to in paragraph 4 of article I of this annex. UNTAC will endeavour to complete these processes within four weeks from the date of the beginning of the second phase. On the completion of regroupment of all forces and of their movement to cantonment areas, respectively, the Commander of the military component of UNTAC will so inform each of the four Parties.

3 The Parties agree that, as their forces enter the designated cantonment areas, their personnel will be instructed by their commanders to immediately hand over all their arms, ammunition and equipment to UNTAC for storage in the custody of UNTAC.

4 UNTAC will check the arms, ammunition and equipment handed over to it against the lists referred to in paragraph 3 (*b*) of article I of this annex, in order to verify that all the arms, ammunition and equipment in the possession of the Parties have been placed under its custody.

Article IV

Resupply of forces during cantonment

The military component of UNTAC will supervise the resupply of all forces of the Parties during the regroupment and cantonment processes. Such resupply will be confined to items of a non-lethal nature such as food, water, clothing and medical supplies as well as provision of medical care.

Article V

Ultimate disposition of the forces of the Parties and of their arms, ammunition and equipment

1 In order to reinforce the objectives of a comprehensive political settlement, minimize the risks of a return to warfare, stabilize the security situation and build confidence among the Parties to the conflict, all Parties agree to undertake a phased and balanced process of demobilization of at least 70 per cent of their military forces. This process shall be undertaken in accordance with a detailed plan to be drawn up by UNTAC on the basis of the information provided under Article I of this annex and in consultation with the Parties. It should be completed prior to the end of the process of registration for the elections and on a date to be determined by the Special Representative of the Secretary-General.

2 The Cambodian Parties hereby commit themselves to demobilize all their remaining forces before or shortly after the elections and, to the extent that full demobilization is unattainable, to respect and abide by whatever decision the newly elected government that emerges in accordance with Article 12 of this Agreement takes with regard to the incorporation of parts or all of those forces into a new national army. Upon completion of the demobilization referred to in paragraph 1, the Cambodian Parties and the Special Representative of the Secretary-General shall undertake a review regarding the final disposition of the forces remaining in the cantonments, with a view to determining which of the following shall apply:

a If the Parties agree to proceed with the demobilization of all or some of the forces remaining in the cantonments, preferably prior to or otherwise shortly after the elections, the Special Representative shall prepare a time-table for so doing, in consultation with them.

b Should total demobilization of all of the residual forces before or shortly after the elections not be possible, the Parties hereby undertake to make available all of their forces remaining in cantonments to the newly elected government that emerges in accordance with Article 12 of this Agreement, for consideration for incorporation into a new national army. They further agree that any such forces which are not incorporated into the new national army will be demobilized forthwith according to a plan to be prepared by the Special Representative. With regard to the ultimate disposition of the remaining forces and all the arms, ammunition and equipment, UNTAC, as it withdraws from Cambodia, shall retain such authority as is necessary to ensure an orderly transfer to the newly elected government of those responsibilities it has exercised during the transitional period.

3 UNTAC will assist, as required, with the reintegration into civilian life of the forces demobilized prior to the elections.

4a UNTAC will control and guard all the arms, ammunition and equipment of the Parties throughout the transitional period;

b As the cantoned forces are demobilized in accordance with paragraph 1 above, there will be a parallel reduction by UNTAC of the arms, ammunition and equipment stored on site in the cantonment areas. For the forces remaining in the cantonment areas, access to their arms, ammunition and equipment shall only be on the basis of the explicit authorization of the Special Representative of the Secretary-General;

c If there is a further demobilization of the military forces in accordance with paragraph 2 ( *a*) above, there will be a commensurate reduction by UNTAC of the arms, ammunition and equipment stored on site in the cantonment areas;

d The ultimate disposition of all arms, ammunition and equipment will be determined by the government that emerges through the free and fair elections in accordance with article 12 of this Agreement.

Article VI

Verification of withdrawal from Cambodia and non-return of all categories of foreign forces

1 UNTAC shall be provided, no later than two weeks before the commencement of the second phase of the cease-fire, with detailed information in writing regarding the withdrawal of foreign forces. This information shall include the following elements:

a Total strength of these forces and their organization and deployment;

b Comprehensive lists of arms, ammunition and equipment held by these forces, and their exact locations;

c Withdrawal plan (already implemented or to be implemented), including withdrawal routes, border crossing points and time of departure from Cambodia.

2 On the basis of the information provided in accordance with paragraph 1 above, UNTAC will undertake an investigation in the manner it deems appropriate. The Party providing the information will be required to make personnel available to accompany UNTAC investigators.

3 Upon confirmation of the presence of any foreign forces, UNTAC will immediately deploy military personnel with the foreign forces and accompany them until they have withdrawn from Cambodian territory. UNTAC will also establish checkpoints on withdrawal routes, border crossing points and airfields to verify the withdrawal and ensure the non-return of all categories of foreign forces.

4 The Mixed Military Working Group (MMWG) provided for in article II of this annex will assist UNTAC in fulfilling the above-mentioned tasks.

Article VII

Cessation of outside military assistance to all Cambodian Parties

1 All Parties undertake, from the time of the signing of this Agreement, not to obtain or seek any outside military assistance, including weapons, ammunition and military equipment from outside sources.

2 The Signatories whose territory is adjacent to Cambodia, namely, the Government of the Lao People's Democratic Republic, the Kingdom of Thailand and the Socialist Republic of Vietnam, undertake to:

a Prevent the territories of their respective States, including land territory, territorial sea and air space, from being used for the purpose of providing any form of military assistance to any of the Cambodian Parties. Resupply of such items as food, water, clothing and medical supplies through their territories will be allowed, but shall, without prejudice to the provisions of sub-paragraph (*c*) below, be subject to UNTAC supervision upon arrival in Cambodia;

b Provide written confirmation to the Commander of the military component of UNTAC, not later than four weeks after the second phase of the cease-fire begins, that no forces, arms, ammunition or military equipment of any of the Cambodian Parties are present on their territories;

c Receive an UNTAC liaison officer in each of their capitals and designate an officer of the rank of colonel or equivalent, not later than four weeks after the beginning of the second phase of the cease-fire, in order to assist UNTAC in investigating, with due respect for their sovereignty, any complaints that activities are taking place on their territories that are contrary to the provision of the comprehensive political settlement.

3 To enable UNTAC to monitor the cessation of outside assistance to all Cambodian Parties, the Parties agree that, upon signature of this Agreement, they will provide to UNTAC any information available to them about the routes and means by which military assistance, including weapons, ammunition and military equipment, have been supplied to any of the Parties. Immediately after the second phase of the cease-fire begins, UNTAC will take the following practical measures:

a Establish check-points along the routes and at selected locations along the Cambodian side of the border and at airfields inside Cambodia;

b Patrol the coastal and inland waterways of Cambodia;

c Maintain mobile teams at strategic locations within Cambodia to patrol and investigate allegations of supply of arms to any of the Parties.

Article VIII

Caches of weapons and military supplies

1 In order to stabilize the security situation, build confidence and reduce arms and military supplies throughout Cambodia, each Party agrees to provide to the Commander of the military component of UNTAC, before a date to be determined by him, all information at its disposal, including marked maps, about known or suspected caches of weapons and military supplies throughout Cambodia.

2 On the basis of information received, the military component of UNTAC shall, after the date referred to in paragraph 1, deploy verification teams to investigate each report and destroy each cache found.

Article IX

Unexploded ordnance devices

1 Soon after arrival in Cambodia, the military component of UNTAC shall ensure, as a first step, that all known mine-fields are clearly marked.

2 The Parties agree that, after completion of the regroupment and cantonment processes in accordance with Article III of the present annex, they will make available mine-clearing teams which, under the supervision and control of UNTAC military personnel, will leave the cantonment areas in order to assist in removing, disarming or deactivating remaining unexploded ordnance devices. Those mines or objects which cannot be removed, disarmed or deactivated will be clearly marked in accordance with a system to be devised by the military component of UNTAC.

3 UNTAC shall:

a Conduct a mass public education programme in the recognition and avoidance of explosive devices;

b Train Cambodian volunteers to dispose of unexploded ordnance devices;

c Provide emergency first-aid training to Cambodian volunteers.

Article X

Investigation of violations

1 After the beginning of the second phase, upon receipt of any information or complaint from one of the Parties relating to a possible case of non-compliance with any of the provisions of the present annex or related provisions, UNTAC will undertake an investigation in the manner which it deems appropriate. Where the investigation takes place in response to a complaint by one of the Parties, that Party will be required to make personnel available to accompany the UNTAC investigators. The results of such

investigation will be conveyed by UNTAC to the complaining Party and the Party complained against, and if necessary to the SNC.

2 UNTAC will also carry out investigations on its own initiative in other cases when it has reason to believe or suspect that a violation of this annex or related provisions may be taking place.

Article XI

Release of prisoners of war

The military component of UNTAC will provide assistance as required to the International Committee of the Red Cross in the latter's discharge of its functions relating to the release of prisoners of war.

Article XII

Repatriation and resettlement of displaced Cambodians

The military component of UNTAC will provide assistance as necessary in the repatriation of Cambodian refugees and displaced persons carried out in accordance with articles 19 and 20 of this Agreement, in particular in the clearing of mines from repatriation routes, reception centres and resettlement areas, as well as in the protection of the reception centres.

...

## Cartagena Declaration on the Renunciation of Weapons of Mass Destruction*

Cartagena, 4 December 1991

The Presidents of the member countries of the Andean Group, meeting in the city of Cartagena,

Considering that the fundamental changes in international relations resulting from the relaxation of tension between East and West and the end of the cold war have great historical significance and offer new opportunities for strengthening international peace and security,

Conscious that in the present global process of relaxation of tension, international security and cooperation, particularly in Latin America and the Caribbean, must be viewed from an overall perspective linked to the strengthening of democracy, the fostering of a climate of neighbourly peace, the full enjoyment of human rights and the promotion of the economic and social well-being of our peoples,

Resolved to contribute to the global process of international relaxation of tension currently under way,

Resolved to ensure that weapons of mass destruction are not introduced into Latin America and the Caribbean, since that would trigger a disastrous arms race, and thereby limit the allocation and transfer of greater financial resources for the social and economic development of the region,

Prepared to strengthen the role of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean of 1967 (Treaty of Tlatelolco) and the protocols thereto, and to extend that prohibition to all categories of weapons of mass destruction so as to transform this region into a zone free of such weapons,

Reaffirming support for the Acapulco Commitment to Peace, Development and Democracy adopted at the first Summit Meeting of the Heads of State of the Permanent Mechanism for Consultation and Concerted Political Action, which states that the concept of security in our region must deal not only with the peace and stability aspects but also with those relating to political, economic and financial vulnerability,

Endorsing the Guadalajara Declaration which seeks to promote conventional disarmament, to prohibit weapons of mass destruction and to ensure that measures for controlling and reducing the latter do not stand in

*A/46/760, annex.

the way of legitimate access to advanced technologies for peaceful uses, since these are indispensable for the social and economic development of the peoples of the region,

Supporting the subregional and multilateral commitments in favour of disarmament, including the Treaty on the Non-Proliferation of Nuclear Weapons, the Declaration of Ayacucho of 1974, the Andean commitment to peace and cooperation and the Foz de Iguazú Declaration concerning the joint nuclear policy of Argentina and Brazil; and also the resolutions concerning cooperation for security in the hemisphere and limitation of the proliferation of instruments of war and weapons of mass destruction adopted by the Organization of American States at its twenty-first General Assembly, the Declaration concerning the use of nuclear energy exclusively for peaceful purposes, signed by the Presidents of Argentina and Brazil, and the Mendoza Accord,

Agree to the following Declaration:

1 Welcome the initiative by the Government of Peru concerning the prohibition of weapons of mass destruction in Latin America and the Caribbean as the start of a gradual process for strengthening security and mutual confidence in the region.

2 Express the commitment of their Governments to renounce the possession, production, development, use, testing and transfer of all weapons of mass destruction, whether nuclear, bacteriological (biological), toxin or chemical, and to refrain, under any circumstances, from stockpiling, acquiring or retaining such categories of weapons.

3 Reaffirm the inalienable right of their peoples to take advantage, through international cooperation, of scientific and technical developments exclusively for peaceful uses in the field of nuclear energy, biology and the chemical industry and, likewise, to accede to space technologies.

4 Call on the countries possessing technology for the production of weapons of mass destruction to strengthen effectively the systems for controlling the transfer of such technologies.

5 Request the countries possessing weapons of mass destruction to undertake not to use such weapons and not to threaten the Parties to the present Declaration with their use.

6 Announce their intention to be founding signatories to the convention on the complete and effective prohibition of the development, production, stockpiling and use of chemical weapons and on their destruction, to which end they express their support for the negotiations of the Conference on Disarmament for the adoption of the convention on chemical weapons in 1992.

7 Support the Convention on the Prohibition of the Development,

Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction of 1972 and the negotiations to strengthen its verification machinery.

8 Declare their willingness to promote the transformation of Latin America and the Caribbean into the first inhabited area of the world free from weapons of mass destruction.

9 State that the responsibility for prohibiting the proliferation of weapons of mass destruction and for halting the arms race lies with the international community as a whole, but particularly with those who possess nuclear weapons.

10 Consider prompt discontinuance of nuclear tests of all types to be the best means of putting an end to the increasing sophistication of nuclear weapons and the development of new types of such weapons.

11 Appeal to the other Governments of the region to accede to the present Declaration, and to the entire international community, in general, to support the objectives and purposes enunciated therein and to refrain from any action which might weaken the spirit of this Declaration.

Cartagena, 4 December 1991

Jaime Paz Zamora
President of Bolivia

César Gaviria Trujillo
President of Colombia

Rodrigo Borja
President of Ecuador

Alberto Fujimori
President of Peru

Carlos Andres Perez
President of Venezuela

## Developments in the Korean Peninsula

# Agreement on Reconciliation, Non-Aggression, and Cooperation and Exchange between the North and the South*

Seoul, 13 December 1991

Pursuant to the will of all the fellow countrymen desirous of the peaceful reunification to the divided country.

Reaffirming the three principles of national reunification laid down in the July 4 North-South Joint Statement.

Pledging themselves to remove the political and military confrontation for the achievement of national reconciliation, for the prevention of invasion and conflicts by the armed forces, for the realization of detente and for the guarantee of peace, to realize many-sided cooperation and exchange for the promotion of the common interests and prosperity of the nation, and to make concerted efforts to achieve peaceful reunification, admitting that the relationship between the sides is not the one between countries but a special one formed temporarily in the process of advancing towards reunification, the north and the south have agreed as follows:

### 1. North-South Reconciliation

*Article 1.* The north and the south shall recognize and respect the system that exists on the other side.

*Article 2.* The north and the south shall not interfere in the internal affairs of the other side.

*Article 3.* The north and the south shall cease to abuse and slander the other side.

*Article 4.* The north and the south shall refrain from all acts aimed at destroying and overthrowing the other side.

*Article 5.* The north and the south shall make concerted efforts to convert the present armistice into a durable peace between the north and the

*The English translation of the Agreement was contained in press release No. 31 of 14 December 1991, issued by the Permanent Mission of the Democratic People's Republic of Korea to the United Nations.

south and observe the present Military Armistice Agreement until such peace has been achieved.

*Article 6.* The north and the south shall discontinue confrontation and competition, cooperate with each other and make concerted efforts for national dignity and interests in the international arena.

*Article 7.* The north and the south shall set up and operate a North-South Liaison Office at Panmunjom within 3 months after the effectuation of this agreement in order to ensure close contacts and prompt consultation with each other.

*Article 8.* The north and the south shall form a North-South Political Subcommittee within the framework of the full-dress talks in one month after the effectuation of the agreement in order to discuss concrete measures for implementing and observing the agreement on north-south reconciliation.

## 2. North-South Non-Aggression

*Article 9.* The north and the south shall not use arms against the other side, nor shall they invade the other by force of arms.

*Article 10.* The north and the south shall settle differences and disputes between them peacefully through dialogue and negotiation.

*Article 11.* The north and the south shall designate as the demarcation line and zone of the non-aggression the Military Demarcation Line which was laid down in the agreement on the Military Armistice dated 27 July 1953 and the area which has so far been within the jurisdiction of the sides.

*Article 12.* In order to implement and guarantee non-aggression the north and the south shall set up and operate a North-South Joint Military Committee within three months after the effectuation of this agreement.

The North-South Joint Military Committee shall discuss and promote the realization of military confidence-building and disarmament, such as notification of and control over the transfer of large units and military exercises, use of the demilitarized zone for peaceful purposes, exchange of military personnel and information, the realization of phased arms cutdown including the removal of mass destruction weapons and offensive capability and their verification.

*Article 13.* The north and the south shall install and operate direct telephone links between the military authorities of the sides in order to prevent the outbreak and escalation of accidental armed conflicts.

*Article 14.* The north and the south shall form a North-South Military Subcommittee within the framework of the full-dress talks in one month after the effectuation of this agreement and discuss concrete measures for

the implementation and observance of the agreement on non-aggression and the removal of military confrontation.

### 3. North-South Cooperation and Exchange

*Article 15.* The north and the south shall effect economic cooperation and exchange, such as joint development of resources and the exchange of goods in the form of exchange within the nation and the joint investment for the coordinated and balanced development of the national economy and for the promotion of the well-being of the whole nation.

*Article 16.* The north and the south shall effect cooperation and exchange in various fields such as science, technology, education, literature and art, public health, sports, environment and mass media including newspapers, radio, TV and publications.

*Article 17.* The north and the south shall effect free travels and contacts between members of the nation.

*Article 18.* The north and the south shall effect free correspondence, travels, meetings and visits between the separated families and relatives and their reunion based on their free will and take measures regarding other problems awaiting humanitarian solution.

*Article 19.* The north and the south shall connect severed railways and roads and open sea and air routes.

*Article 20.* The north and the south shall install and connect the facilities necessary for the exchange of post and telecommunication and ensure secrecy in this sphere of exchange.

*Article 21.* The north and the south shall cooperate with each other in economic, cultural and many other fields in the international arena and jointly conduct external activities.

*Article 22.* For the implementation of the agreement on effecting cooperation and exchange in various fields, such as economy and culture, the north and the south shall form a North-South Joint Economic Cooperation and Exchange Committee and other departmental joint committees within three months after the effectuation of this agreement.

*Article 23.* In order to discuss concrete measures for the implementation and observance of the Agreement on Cooperation and Exchange between the North and the South, the two parts shall establish a North-South Cooperation and Exchange Subcommittee within the framework of the full-dress talks in one month after the effectuation of the agreement.

### 4. Amendments and Effectuation

*Article 24.* This agreement can be amended and supplemented by mutual consent.

*Article 25.* This agreement shall become effective as from the date when the north and the south exchange its text after they go through necessary formalities.

13 December 1991

Yon Hyong-muk,
Premier of the DPRK
Administration Council
Head of the north side's delegation
of the N-S High-level Talks

Chung Won-shik,
Prime Minister of the ROK
Chief Delegate of the
south side's delegation
to the S-N High-level Talks

## Safeguards Agreement with the International Atomic Energy Agency (IAEA) Signed by North Korea*

Vienna, 30 January 1992

The Democratic People's Republic of Korea (DPRK) today signed a safeguards agreement with the International Atomic Energy Agency (IAEA) in connection with the Non-Proliferation Treaty, which, once ratified, will permit the inspection and verification of its nuclear materials.

The agreement, which was signed by the Vice Minister of Atomic Energy of the DPRK, Mr. Hong Gun Pyo, and by the IAEA's Director General, Dr. Hans Blix, was negotiated last year. It will come into effect upon ratification by the DPRK.

At the signing ceremony, Dr. Blix said: "I am pleased that we have now signed an agreement whereby the DPRK is submitting all nuclear material and facilities in the DPRK—present and future—to IAEA safeguards verification. The DPRK is a party to the Non-Proliferation Treaty. IAEA safeguards are applied to verify that the parties to that treaty are using all nuclear material and installations for exclusively peaceful purposes. To create the openness that is necessary for confidence, regionally and globally, these safeguards must be effective and comprehensive.

"We are trying to strengthen them.

"We look forward to an early ratification of the agreement by the DPRK and to full co-operation with IAEA in the implementation of the agreement. I should like to thank all those who have been involved in the negotiation and drafting of the agreement and thank the delegation from the DPRK for having come here to sign the agreement."

*Press release No. 92/6 of 30 January 1992, issued by IAEA.

## Safeguards Agreement with the International Atomic Energy Agency (IAEA) Signed by Argentina and Brazil*

Vienna, 13 December 1991

In the presence of Presidents Dr. Carlos Saúl Menem of Argentina and Dr. Fernando Collor de Mello of Brazil, a comprehensive safeguards agreement was signed today between the Governments of Argentina, Brazil, the joint Brazilian-Argentine Agency for Accounting and Control of Nuclear Material (ABACC) and the IAEA. The agreement was signed at IAEA headquarters in Vienna by Argentine Ambassador Jorge Alberto Taiana, Brazilian Ambassador Thereza Maria Machado Quintella, Mr. Jorge Coll, Secretary General of the ABACC, and Dr. Hans Blix, Director General of the IAEA.

Following the signing, the Presidents addressed a special meeting of the IAEA Board of Governors, which had approved the draft safeguards agreement on 7 December 1991. In their remarks, both Presidents emphasized their commitments to international peace and security and their recognition of the IAEA's central role in the process, describing the safeguards agreement as an historic step in their countries' relations in the nuclear field. President Menem called the agreement a "true milestone" in mutual efforts to ensure the peaceful development of nuclear energy and to establish an effective system of verification and control.

President Collor described the agreement as "one more page in the history" of Brazil's and Argentina's "fraternal and promising relations", one that gives "new thrust" to the process of non-proliferation and disarmament.

In his statement to the Board, IAEA Director General Blix commended Presidents Menem and Collor for their political will, determination, and commitment to peaceful nuclear development and non-proliferation. Dr. Blix called the agreement "an important contribution to the efforts to move the world decisively away from nuclear weapons" and expressed the hope that it would serve "to inspire other countries to use IAEA safeguards to build confidence, to facilitate regional and international co-operation, and to promote an accelerated nuclear disarmament".

The safeguards agreement covers all nuclear materials in all nuclear activities within the territories of Argentina and Brazil, under their jurisdic-

*Press release No. 91/48 of 13 December 1991, issued by IAEA.

tion or carried out under their control anywhere. It further provides for the application of safeguards to exports of nuclear material. The agreement is compatible with the Treaty on the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco).

The safeguards agreement was negotiated by the IAEA upon the request of the Governments of Argentina and Brazil following their mutual Declaration of Common Nuclear Policy of 28 November 1990 at Foz do Iguaçu, Brazil, and their conclusion of a bilateral agreement at Guadalajara, Mexico, on 18 July 1991.

The safeguards agreement will enter into force once ratified by the two countries.

## Agreement on Joint Measures with Respect to Nuclear Weapons in the Commonwealth of Independent States*

Alma Ata, 21 December 1991

The Republic of Belarus, the Republic of Kazakhstan, the Russian Federation (RSFSR) and Ukraine, hereinafter referred to as "the participating States",

Confirming their commitment to the non-proliferation of nuclear weapons,

Aspiring to the elimination of all nuclear weapons,

Desirous of promoting the strengthening of international stability,

Have agreed as follows:

**Article 1**

The nuclear weapons with which the Joint Strategic Armed Forces are equipped safeguard the collective security of all participants in the Commonwealth of Independent States.

**Article 2**

The participating States in the present Agreement confirm the obligation relating to the non-first-use of nuclear weapons.

**Article 3**

The participating States in the present Agreement shall jointly develop a policy on nuclear issues.

**Article 4**

Pending the complete elimination of nuclear weapons from the territories of the Republic of Belarus and Ukraine, the decision regarding the need to use such weapons shall be taken with the consent of the Heads of the participating States of the Agreement by the President of the RSFSR on the basis of procedures drawn up jointly by the participating States.

*This Agreement is one of the documents issued at the high-level meeting of countries participating in the Commonwealth held at Alma Ata on 21 December 1991. The text is reproduced in United Nations document A/47/60, S/23329, annex VI.

**Article 5**

1 The Republic of Belarus and Ukraine undertake to accede to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons as non-nuclear States and to conclude with IAEA the corresponding safeguards agreement.

2 The participating States in the present Agreement undertake not to transfer to any party whatsoever nuclear weapons or other nuclear explosive devices in technology, or control, either direct or indirect, over such weapons and explosive devices, and not in any way to assist, encourage or incite any State not possessing nuclear weapons to produce or acquire by any other means nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices.

3 The provisions of paragraph 2 of this article shall not prevent the transfer of nuclear weapons from the territory of the Republic of Belarus, the Republic of Kazakhstan and Ukraine to the territory of the RSFSR for the purpose of their destruction.

**Article 6**

The participating States of the present Agreement shall in conformity with the international Treaty promote the elimination of nuclear weapons. By 1 July 1992 the Republic of Belarus, the Republic of Kazakhstan and Ukraine shall ensure the withdrawal of tactical nuclear weapons to central bases adjacent to the manufacturing plants for dismantling under joint control.

**Article 7**

The Governments of the Republic of Belarus, the Republic of Kazakhstan, the Russian Federation (RSFSR) and Ukraine undertake to submit the Treaty on the Reduction and Elimination of Strategic Offensive Arms to the Supreme Soviets of their States for ratification.

**Article 8**

This Agreement is subject to ratification. It shall enter into force 30 days after deposit of all the instruments of ratification with the Government of the RSFSR.

DONE at Alma Ata in one authentic copy in the Belarussian, Kazakh, Russian and Ukrainian languages, all texts being equally authentic.

For the Republic
of Belarus
S. Shushkevich

For the Republic
of Kazakhstan
N. Nazarbaev

For the Russian
Federation
(RSFSR)
B. Yeltsin

For Ukraine
L. Kravchuk

## Developments in the El Salvador Peace Process*

### New York Act

New York, 31 December 1991

The Government of El Salvador and the Frente Farabundo Martí para la Liberación Nacional (FMLN) hereby declare that they have reached definitive agreements which, combined with those previously signed at San José, Mexico City and New York, complete the negotiations on all substantive items of the Caracas Agenda and the New York "Compressed Negotiations". Their implementation will put a final end to the Salvadorian armed conflict.

An agreement has also been reached on all technical and military aspects relating to the separation of the warring parties and the cessation of the armed conflict, which includes the end of the military structure of the FMLN and the reintegration of its members, within a framework of full legality, into the civil, political and institutional life of the country.

The parties have also agreed that the cessation of the armed conflict shall take effect formally on 1 February 1992 and shall conclude on 31 October 1992.

A further meeting between the parties has been scheduled for 5 January 1992 to negotiate the timetable for implementing the agreements and the procedure for ending the military structure of the FMLN and reintegrating its members, within a framework of full legality, into the civil, political and institutional life of the country.

Such negotiations must be successfully concluded by 10 January 1992 at the latest. Otherwise, the parties undertake to accept, by 14 January 1992 at the latest, a formula for resolving outstanding issues to be proposed to them by the Secretary-General of the United Nations. The Final Peace Agreements will be signed at Mexico City on 16 January 1992.

The parties undertake to preserve the atmosphere necessary for maintaining and expanding the unilateral decisions which they have taken in order to avoid all military activity.

New York, 31 December 1991

*A/46/863-S/23504, annex I.

Representing the Government
of El Salvador
(*Signed*) Mr. Oscar Santamaria
(*Signed*) Col. Mauricio Ernesto Vargas
(*Signed*) Mr. David Escobar Galindo
(*Signed*) Col. Juan Martinez Varela
(*Signed*) Mr. Abelardo Torres
(*Signed*) Mr. Rafael Hernan Contreras

Representing the Frente
Farabundo Martí para la
Liberación Nacional
(*Signed*) Cmdr. Schafik Handal
(*Signed*) Cmdr. Francisco Jovel
(*Signed*) Cmdr. Salvador Sanchez Ceren
(*Signed*) Cmdr. Eduardo Sancho
(*Signed*) Cmdr. Joaquín Villalobos

(*Signed*) Alvaro De Soto
Representative of the Secretary-General
of the United Nations

## New York Act II*

New York, 13 January 1992

The Government of El Salvador and the Frente Farabundo Martí para la Liberación Nacional, meeting at United Nations Headquarters, have reached agreements which complete the negotiations on all issues outstanding when the New York Act was signed on 31 December 1991. This opens the way for the signing of the Peace Agreement in Mexico City on 16 January 1992.

New York, 13 January 1992

Representing the Government
of El Salvador
(*Signed*) Mr. Oscar Alfredo Santamaria
(*Signed*) Mr. David Escobar Galindo
(*Signed*) Gen. Mauricio Ernesto Vargas
(*Signed*) Mr. Rafael Hernan Contreras

Representing the Frente
Farabundo Martí para la
Liberación Nacional
(*Signed*) Cmdr. Schafik Handal
(*Signed*) Cmdr. Salvador Sanchez Ceren
(*Signed*) Ana Guadalupe Martinez
(*Signed*) María Marta Villadares

(*Signed*) Alvaro De Soto
Representative of the Secretary-General
of the United Nations

*A/46/863-S/23504, annex II.

## Excerpt from a Message from the President of the Russian Federation, B. N. Yeltsin, to the Secretary-General of the United Nations*

27 January 1992

. . . The structures of national armed forces must to a greater extent than is now the case be geared to the goals of ensuring collective security. Accordingly, Russia will do everything possible to promote the further strengthening of the role of the United Nations and its component institutions in the maintenance of peace. If necessary, this will include the provision of our armed forces, in accordance with constitutional procedures, to participate in appropriate international activities.

Russia declares that it is prepared to cooperate with all States and international organizations to this end. It reaffirms that it will not use armed force against any State or States in any circumstances whatsoever, except in response to aggression against Russia, its friends and allies, and will not be the first to use nuclear weapons.

A key element of our efforts to create a single global security space will be active participation and cooperation in the process of arms limitation and reduction.

Disarmament is a traditional priority of Russia. This goes back to the Hague conferences at the end of the last and beginning of the present century, of which Russia was the initiator. And today disarmament is seen by us as one of the most important instruments for ensuring national security and strengthening international peace and stability.

As the successor State to the former USSR, Russia reaffirms all its obligations under bilateral and multilateral treaties and agreements in force and signed on the subject of arms limitation and disarmament and will strictly observe them.

As regards military-political and military-strategic questions, we shall steadfastly abide by the following long-term policies.

We shall organize the armed forces in such a manner that they cannot be used for purposes other than defence and peace-keeping activities in accordance with decisions of the international community.

On the road to the complete elimination of nuclear weapons everywhere, we shall strive to reduce nuclear forces to the minimum level which

*A/47/77-S/23486 and Corr.1, annex.

would guarantee that there will be no war. Incentives to making a first disabling strike must also be eliminated.

We are no longer adversaries of the United States and the other NATO countries and we consider as obsolete a situation in which we aim our nuclear sights at each other. We must by joint efforts decisively deliver ourselves from this legacy of the period of confrontation and "cold war".

The processes of nuclear disarmament, which the interests of the peoples of the world so insistently require us to implement, will be incomplete and inadequate if they are conducted solely within the framework of relations between Russia and the United States. The other nuclear Powers—China, the United Kingdom and France—must not remain on the sidelines and continue the uncontrolled build-up of their offensive nuclear arsenals. This could already in the next few years destabilize the international situation. They must also participate in the processes of genuine nuclear disarmament.

In addition to the elimination of nuclear weapons, we support the complete elimination of all other types of weapons of mass destruction under effective control.

We favour the adoption of effective measures to strengthen the regime of non-proliferation of nuclear and other types of weapons of mass destruction and also of the means of their delivery.

We advocate the maximum mutual openness and predictability, as well as measures of trust in the military sphere, including military doctrines, defence budgets, plans for the organization and activities of armed forces and the international arms trade.

We are open to cooperation in the elaboration of additional measures designed to avert the outbreak of war through accident, miscalculation or terrorism and to prevent military incidents.

We shall cooperate and participate in the creation of collective security structures on the basis of the United Nations Charter.

The pursuit of these long-term disarmament policies requires the very rapid adoption of a series of effective measures—both in cooperation with our partners and unilaterally—in all the key directions of the process of arms limitation and reduction.

### Strategic offensive arms

The Treaty on strategic offensive arms has been submitted for ratification to the Supreme Soviet of the Russian Federation. The process of ratification of the Treaty has also begun in the United States.

Russia wishes not to rest on its laurels but, together with the United States, to move forward ever faster along the road to the curtailment of

superfluous military structures, particularly nuclear structures. Further to the Treaty on strategic offensive arms, we have already taken a whole series of major unilateral measures. About 600 strategic ballistic missiles have been removed from combat duty, a whole series of military programmes for the creation of new types of strategic offensive arms has been curtailed, and measures have been taken to increase strategic stability and predictability.

As you see, the policy of good example in relations between Russia and the United States in the matter of the reduction of nuclear arsenals is already bearing real fruit and it must be developed by every possible means.

With this aim, we have decided on new initiatives designed to accelerate the process of nuclear disarmament.

In addition, I have sent President George Bush the proposals of Russia for new, far-reaching reductions in strategic offensive arms.

Following the reductions which we have proposed on each side, there would remain a total of 2,000 to 2,500 strategic nuclear devices. In other words, the existing strategic arsenals of Russia and the United States would be radically reduced.

I intend at the forthcoming meeting with President George Bush at Camp David to discuss in detail and in a constructive spirit questions relating to further major reductions in strategic offensive arms.

### Tactical nuclear weapons

We have also already undertaken, in parallel with the United States of America, major measures to cut tactical nuclear weapons. Currently, such weapons of the former USSR are located in the territory of three States—Russia, Belarus and Ukraine. Pursuant to the agreement reached between the States participating in the Commonwealth of Independent States, all tactical nuclear munitions will be relocated to Russia by 1 July 1992.

Production of nuclear warheads for ground-launched tactical nuclear missiles, nuclear artillery shells and nuclear mines has been halted. Stocks of such tactical nuclear munitions will be eliminated.

I say also that Russia will eliminate one third of the sea-launched tactical nuclear weapons and half of the nuclear warheads for ground-to-air missiles. We have already taken steps towards this end.

With a view to the total elimination of tactical nuclear weapons in the foreseeable future, Russia will, in addition to these steps that are already being taken, cut by half its stocks of air-launched tactical nuclear munitions.

### Anti-ballistic missiles and space

Russia confirms its adherence to the Treaty on anti-ballistic missiles,

which is one of the effective means of limiting the strategic arms race and an important factor in the maintenance of strategic stability.

While maintaining this position of principle, we are prepared to continue open-minded discussion of the United States proposal on limited non-nuclear anti-ballistic missile systems. Our final attitude to this idea will be determined by the extent to which it meets the objective of strengthening strategic stability against a background of sharp cuts in strategic offensive arms.

I declare Russia's readiness, on a basis of mutuality with the United States of America, to eliminate existing anti-satellite systems and to work out an agreement for a total ban on weapons specially designed to attack satellites.

### Prohibition of nuclear weapons tests and of the production of fissile materials for use in armaments

Russia is resolutely in favour of all nuclear weapons tests being prohibited. We are abiding by the one-year moratorium on nuclear explosions proclaimed in October 1991, and we hope that the other nuclear Powers will also refrain from conducting nuclear tests. An atmosphere of mutual restraint would promote the reaching of agreement not to conduct such tests at all.

In the interests of finally resolving this problem, we propose to the United States of America the renewal of the phased bilateral talks on the further limitation of nuclear weapons tests.

Russia intends to continue implementing the programme for halting the production of weapons-grade plutonium. Industrial reactors for the production of weapons-grade plutonium will be shut down by the year 2000, and some of them, under an accelerated timetable, as early as 1993. We confirm our proposal to the United States of America to reach agreement on a monitored cessation of the production of fissile materials for weapons.

### Non-proliferation of weapons of mass destruction and means of their delivery

As the successor State to the USSR, Russia naturally reaffirms its obligations under the Treaty on the Non-Proliferation of Nuclear Weapons, including those devolving on it as a depositary. We are counting on the early accession to the Treaty, as non-nuclear States, of Belarus, Kazakhstan and Ukraine, and also of the other States participating in the Commonwealth of Independent States.

Russia declares its full support for the activity of the International

Atomic Energy Agency, and advocates a strengthening of the effectiveness of its safeguards.

We are pleased that an understanding has been reached on the establishment of a nuclear-weapon-free zone on the Korean peninsula.

We intend to take further steps to ensure that export from Russia should not lead to the proliferation of means of mass destruction. From the specific standpoint, we are as of now working on the issues involved in arriving at the principle of "comprehensive IAEA guarantees" as a condition of our peaceful nuclear exports and in officially adhering, as an equal participant, to the international regime for the non-proliferation of missiles and missile technology. We support the efforts of the "Australian group" with respect to the monitoring of chemical exports.

It is our intention to adopt domestic legislation regulating the export from Russia of "dual-purpose" materials, equipment and technologies which could be used to develop nuclear, chemical and biological weapons, as well as military missiles. We are also establishing an effective system for the State monitoring of such exports. We shall institute the closest cooperation and coordination between all States participating in the Commonwealth of Independent States on these issues.

Russia supports the guidelines approved at London in October 1991 by the major conventional weapons exporting countries on trade in armaments, and will abide by them.

### Conventional weapons

The treaty on conventional armed forces in Europe has been submitted to the Russian Parliament for ratification. There is an understanding with the other States participating in the Commonwealth of Independent States to whose territory the applicability of the treaty extends that they will also ratify it.

Russia confirms its intention, jointly with the other States participating in the Commonwealth of Independent States, to reduce the armed forces of the former Union of Soviet Socialist Republics by 700,000.

Russia attaches great importance both to the talks currently under way in Vienna on strength reductions and confidence-building measures and to the forthcoming new talks, after the "Helsinki-II" conference, on security and cooperation in Europe. These new talks could become a full-time Europe-wide forum for seeking approaches to the establishment of a collective Europe-wide security system.

Russia will seek to reach agreement in negotiations with China on the reduction of armed forces and armaments in the frontier region.

Another important contribution to the strengthening of stability will

be made by our decision not to hold in 1992 major manoeuvres involving more than 13,000 troops, and this not only in the European, but also in the Asian, part of the territory of the Commonwealth of Independent States.

We also hope that there is a possibility of signing in the very near future a treaty on an "open skies" regime.

### Chemical weapons

We are in favour of the earliest possible conclusion—in 1992—of a global convention on the prohibition of chemical weapons which, while effectively barring the possession of chemical weapons, would not impair the lawful economic interests of its parties.

Russia is abiding by the agreement signed with the United States in 1990 on the non-production and destruction of chemical weapons. However, the deadlines it specifies for the destruction of such weapons will require some adjustment.

All the chemical weapons of the former USSR are located in the territory of Russia, and it will take responsibility for destroying them. We are preparing a State programme for destroying such weapons, and are ready to cooperate in this matter with the United States of America and other interested countries.

### Biological weapons

Russia is in favour of the strict implementation of the 1972 Convention on the Prohibition of Biological Weapons and of the establishment on a multilateral basis of an appropriate monitoring mechanism and for the implementation of measures to build confidence and promote openness.

Russia, as a party to the 1972 Convention, repudiates those parts of the reservations made by the USSR to the 1925 Geneva Protocol for the prohibition of the use in war of chemical and bacteriological methods which relate to the possibility of retaliatory use of biological weapons.

### Defence budget

Russia will continue to make substantial cuts in its defence budget and to apply them to social issues.

In 1990-1991, defence expenditures in comparable prices were already reduced by 20 per cent, and within this figure expenditures on the purchase of armaments and technology were cut by 30 per cent.

In 1992, we intend to cut military expenditures by a further 10 per cent (in 1991 prices). The volume of arms production in the coming year will be approximately half that for last year.

**Conversion of military production**

Russia welcomes the international cooperation in the field of conversion of military production, and will for its part encourage it by establishing a "most favourable treatment regime" and instituting tax concessions for relevant joint projects. Conversion will be carried out at maximum advantage to the nation.

These are the main lines of Russia's policy in the field of arms reduction and disarmament. We are open to ideas and proposals from other States aimed at strengthening international peace and security. Through joint efforts, a stable world can and must be guaranteed.

## Excerpt from the State of the Union Message by the President of the United States, George Bush*

Washington, D.C., 28 January 1992

. . .

Tonight I can tell you of dramatic changes in our strategic nuclear force. These are actions we are taking on our own—because they are the right thing to do.

After completing 20 planes for which we have begun procurement, we will shut down further production of the B-2 bomber. We will cancel the small ICBM programme. We will cease production of new warheads for our sea-based ballistic missiles. We will stop all new production of the Peacekeeper missile. And we will not purchase any more advanced cruise missiles.

This weekend I will meet at Camp David with Boris Yeltsin of the Russian Federation. I have informed President Yeltsin that if the Commonwealth—the former Soviet Union—will eliminate all land-based multiple-warhead ballistic missiles, I will do the following:

—We will eliminate all Peacekeeper missiles.

—We will reduce the number of warheads on Minuteman missiles to one, and reduce the number of warheads on our sea-based missiles by about one third.

—And we will convert a substantial portion of our strategic bombers to primarily conventional use.

President Yeltsin's early response has been very positive, and I expect our talks at Camp David to be fruitful.

. . .

*Text supplied by the United States Mission to the United Nations.

# Recent Books and Articles

Anthony, Ian, ed. *Arms Export Regulations*. New Yo. , Oxford University Press for the Stockholm International Peace Research Institute (SIPRI), 1991. 267 p.

Part I of this book contains case studies for 24 countries—which were among the 68 major conventional arms exporters during the period 1981-1990. Each chapter includes a short introduction, a review of domestic legislation, a description of the decision-making process, a summary of official arms exports policy, and a table showing the values of exports of major weapons as compiled by SIPRI.

Part II examines international regimes and contains individual chapters on the Co-ordinating Committee on Multilateral Export Controls, the European Community and arms export regulations, the Missile Technology Control Regime, United Nations deliberations on the arms trade, and United Nations embargoes against the Republic of South Africa.

A list of national legislation on arms export regulation and a bibliography of works on arms trade control is annexed to the book.

Bailey, Kathleen C. *Doomsday Weapons in the Hands of Many: the Arms Control Challenge of the '90s*. Urbana, Illinois, University of Illinois Press, 1991. 158 p.

Kathleen Bailey, Director of Arms Control Studies for National Security Research, Inc., in her book *Doomsday Weapons*, traces the development and proliferation of nuclear weapons, chemical weapons, biological and toxin agents, and ballistic and cruise missiles. A final chapter examines United States policy on missile proliferation and also the successes and weaknesses of the Missile Technology Control Regime.

Characterizing the proliferation of weapons of mass destruction as the greatest arms control challenge of the 1990s and citing its serious threat to international peace and security, the author believes that arms control is no longer just a super-Power issue. Any further negotiations, she concludes, must involve those countries that have the most to lose, namely, those pursuing weapons of mass destruction.

Bauer, Harald, Michael Brzoska, and Wilfried Karl. *Coordination and Control of Arms Exports from EC Member States and the Development of a Common Arms Export Policy—Study Prepared for the European Parliament, Directorate General for Research.* Hamburg, Institute for Political Science, 1991. 50 p. (Working Papers 54)

Convinced that there is a "distinct necessity for the European Communities to formulate at least constitutive elements of a common arms export policy", the authors present options for a common export policy within the European Community. The study analyses weapon deliveries and criteria for and against arms exports as declared by the European Community.

The first section of the report develops principles for restrictive arms exports. It outlines the official arms export policies of European Community members, specifying the laws and regulations of these countries, and, on the basis of arms transfer data, assesses the actual arms exports.

The report then examines instruments and institutions of common control, and the implementation and implications of a common arms export policy. An overview of international forums for arms transfer control negotiations, several figures and tables and a comprehensive bibliography are given in an appendix.

Bruce, Robert H., ed. *The Modern Indian Navy and the Indian Ocean: Developments and Implications.* Perth, Australia, Centre for Indian Ocean Regional Studies, Curtin University of Technology, published jointly with the Australian Institute of International Affairs, 1989. 168 p. (Studies in Indian Ocean Maritime Affairs, No. 2)

The Centre for Indian Ocean Regional Studies—established in 1986 to promote understanding of the Indian Ocean region in Australia generally and in Western Australia in particular—seeks in this book to address an important naval development in the region—India's naval expansion. The study includes papers by eight contributors which examine the strength of the Indian Navy; the strategic, technological and economic sources of Indian naval expansion; and the implications of Indian naval expansion for other States.

The study is the second in a series entitled "Studies in Indian Ocean Maritime Affairs"; other titles in the series include "Australia and the Indian Ocean: Strategic Dimensions in Increasing Naval Development" and "The

Geographic Contradictions of the Indian Ocean: Canals, Channels and Straits".

Burck, Gordon M., and Charles C. Flowerree. *International Handbook on Chemical Weapons Proliferation*. New York, Greenwood Press for the Federation of American Scientists (FAS), 1991. 650 p.

The Handbook, representing the culmination of a two-year FAS project, is organized into three parts. Part I defines and analyses the evidence of chemical warfare capability. Part II offers country reviews on a regional basis, with a final section on long-range delivery of chemical weapons agents. Part III examines the political factors and antiproliferation measures for controlling the chemical weapons threat.

The Handbook includes, *inter alia*, a description of the elements that comprise a chemical weapons capability, an analysis of data available on Iraq's chemical weapons capability as of September 1990; and a well-documented annex, which includes a glossary of chemical warfare terms, information on the technology of producing chemical weapons agents, and a selected bibliography.

Carton, Alain. *Les neutres, la neutralité, et l'Europe*. (The neutrals, neutrality and Europe). Paris, Fondation pour les études de défense nationale, 1991. 190 p.

Alain Carton, a specialist in European security and a consultant with the French Ministry of Defence, discusses the origins of neutrality in Europe and the possible evolution of this policy in the face of current dramatic developments: the end of the cold war, movement towards the economic integration of Europe, the CSCE (Conference on Security and Co-operation in Europe) process and a reinvigorated United Nations.

In the first part of the book, the author considers how each of the four European neutral States—Austria, Finland, Sweden and Switzerland—has carried out its policy in practice. In the second part, he examines the role of neutrality in the changed European context and, at the global level, in the emerging "new international order". He believes that the future of neutrality will depend upon the capacity of neutral countries to contribute to a more stable balance rather than upon the pursuit of moderation in international relations.

The book contains a bibliography listing publications that treat neutrality in general and those that focus on the policy of a particular country.

Cekota, Jaromír. *The Political Economy of Disarmament in the 1990s*. Hamburg, Institut für Friedensforschung und Sicherheitspolitik, 1991. 44 p. (Heft 58)

This book addresses the world-wide economic consequences of disarmament at the end of the cold war. The author believes United States economic and military strategies during the Reagan Administration led to the "strangulation" of the Soviet economy. The policies were also responsible for creating a domestic economic crisis. He views the conversion of military to civilian production as a crucial aspect of the disarmament process. The speed and extent of conversion will, he believes, be determined by both the evolution of the global system of international relations and effective fiscal constraints. The author estimates that by the end of the decade, the military burden will have stabilized at approximately 2 per cent of the worldwide gross national product (GNP).

Centro Militare di Studi Strategici. *Rapporto di ricerca su sviluppo, armamenti, conflittualità* (Research study on development, armament and conflict). Rivista Militare, Rome, 1991. 139 p.

This piece of research, carried out by the Italian Military Centre for Strategic Studies, analyses the links between military expenditure and four related variables, namely, economic development, dependency, security and conflict. The research is summed up in a number of tables—global, by area and by variable.

The researchers conclude: military expenditure and economic development do not show significant correlations, the ones which emerge are of irregular and casual type; the correlation between military expenditure and dependency can be read in positive and in negative terms, from the point of view of both intensity and tendency; military expenditure and security are linked by relations which are equally positive, null and negative; military expenditure and conflict show ambiguous correlations, in some cases positive and in others negative.

Findlay, Trevor, ed. *Chemical Weapons and Missile Proliferation: With Implications for the Asia/Pacific Region*. Boulder, Colorado, Lynne Rienner Publishers, 1991. 179 p.

Experts and government officials from Australia, the United Kingdom and the United States met at Canberra, Australia, in March 1990 at a

workshop sponsored by the Peace Research Centre of the Australian National University to debate the newer concern of the marriage of chemical weapons and missile-delivery systems. While covering a broad range of issues of universal interest, the workshop focused on the Asia/Pacific region.

The proceedings of the workshop are contained in the book. Relevant excerpts from other workshops held recently in the Asia/Pacific region are also included.

Harle, Vilho, and Pekka Sivonen, eds. *Nuclear Weapons in a Changing Europe*. London, Pinter Publishers for the Tampere Peace Research Institute, 1991. 210 p.

The papers presented in this book are the result of a series of workshops on "European Futures: Bases and Choices" launched by the Tampere Peace Research Institute and held over a two-year period (1988-1990). These workshops seek to clarify the future role of nuclear weapons in the new Europe.

The book aims to contribute to the new debate about security and strategy in Europe. Chapters in the book include: an introduction to and definition of the consequences of nuclear disarmament in Europe: the changing context of nuclear security issues in Europe; the military and political functions of nuclear weapons in both Western Europe and the Warsaw Treaty Organization; tactical nuclear weapons and the concept of minimized nuclear deterrence; the tactical air-to-surface missile; and nuclear disarmament prospects for Europe in the 1990s.

The authors conclude that, despite recent changes, nuclear weapons will continue to have a role to play in Europe.

Jones, Dorothy V. *Code of Peace: Ethics and Security in the World of the Warlord States*. Chicago, The University of Chicago Press, 1991. 208 p.

Dorothy V. Jones, in her book *Code of Peace*, deals with the question of peace ethics in international relations. The book focuses primarily on the progressive development of international law to disclose an underlying code of ethics to guide the conduct of international relations which has been evolving since the First World War. It is the author's belief that such a code of ethics not only is possible, but has already been achieved.

A list of major international instruments from which the principles of the States' ethical code are drawn is annexed to the book.

Kanet, Roger E., and Edward A. Kolodziej, eds. *The Cold War as Cooperation: Superpower Cooperation in Regional Conflict Management*. Baltimore, Maryland, The Johns Hopkins University Press, 1991. 439 p.

*The Cold War as Cooperation* examines in a series of essays how Moscow and Washington handled regional conflict management to their mutual advantage during the cold-war period. Super-Power cooperation in conflict management is examined by regional experts from Europe, Africa and the Middle East, Central and Latin America and Asia, who draw on their personal experiences to identify the lines of super-Power cooperative behaviour as defined by the book's editors.

Many of the papers included in the book were prepared for a workshop held at the University of Illinois at Urbana-Champaign from 4 to 6 May 1989 at which the issue of East-West cooperation was examined within the context of conflict since 1945. A chapter-by-chapter index of cases of super-Power regional cooperation covering the period 1943-1990 is included as an annex.

Kemp, Geoffrey, with the assistance of Shelley A. Stahl. *The Control of the Middle East Arms Race*. Washington, D.C., Brookings Books for the Carnegie Endowment for International Peace, 1991. 232 p.

In his book *The Control of the Middle East Arms Race*, Geoffrey Kemp, a Senior Associate of the Carnegie Endowment for International Peace and Director of its Middle East Arms Proliferation Project, focuses on the geopolitical and strategic issues involved in applying arms control measures to the Middle East.

Originally written to cover the broader perspective of regional conflicts and motivations for weapons proliferation in the arms races in both the Middle East and South Asia, the book was redrafted to focus primarily on the Middle East and to take into account the war in the Persian Gulf and its aftermath.

While supporting new arms control initiatives for the Middle East region, the author believes that not until there is progress in resolving regional conflicts can true arms control measures be implemented in the region.

Köllner, Lutz, and Burkhardt J. Huck, eds. *Abrüstung und Konversion: Politische Voraussetzungen und wirtschaftliche Folgen in der Bundesrepublik.* (Disarmament and Conversion: Political Preconditions and Economic Consequences in the Federal Republic of Germany). Frankfurt am Main and New York, Campus Verlag, 1990. 734 p.

This book, the product of interdisciplinary cooperation by German conversion researchers, supported by a research grant from the Volkswagen-Stiftung, analyses the political preconditions and economic consequences of disarmament in the Federal Republic of Germany. The articles reflect a wide spectrum of potential areas for research in the field of conversion.

They address the status and development of conversion research in the Federal Republic of Germany with those of other countries, Bundeswehr planning, disarmament and a new European security order, the fiscal and economic aspects of conversion and its effects on employment, and the significance of new technology for conversion, and they analyse conversion as it was practised in the former German Democratic Republic.

Lindsay, James M. *Congress and Nuclear Weapons.* Baltimore, Maryland, The Johns Hopkins University Press, 1991. 205 p.

In his book *Congress and Nuclear Weapons*, James Lindsay, an assistant professor of political science at the University of Iowa, examines the dramatic increase in Congressional influence in decision-making on nuclear-weapons acquisitions policy since the 1960s.

Drawing primarily from the public record, and supplementing this information with personal interviews with Congressional leaders and other individuals, he follows closely the Congressional debate on all nuclear-weapon systems—including the Trident submarine and the MX, Pershing II and ASAT missiles—illustrating the way in which Congress makes decisions and why weapons develop as they do. The book concludes with a discussion of the relative merits of Congressional activism on nuclear weapons acquisition policy.

Madalengoitia, Laura, ed. *Medio Ambiente, Desarrollo y Paz.* Lima, Visual Service S.R.L., 1991. 250 p.

Published in cooperation with the United Nations Regional Centre for Peace, Disarmament and Development in Latin America and the Carib-

bean, the Fundación Peruana para la Conservación de la Naturaleza and the Friedrich Naumann Foundation, *Medio Ambiente, Desarrollo y Paz* contains the proceedings of a seminar held in Lima, Peru, on 26 April 1991, which examined the link between economic and social problems, most notably in Peru, and the management of natural resources and the environment. The primary aim of the seminar was to formulate a solid Peruvian, as well as Latin American, position on the environment, to be presented to the United Nations Conference on Environment and Development to be held in Brazil in June 1992.

Marshall, Andrew W., J. J. Martin, and Henry S. Rowen, eds. *On Not Confusing Ourselves: Essays on National Security Strategy in Honor of Albert and Roberta Wohlstetter*. Boulder, Colorado, Westview Press, 1991. 331 p.

The book provides a retrospective of the works of Albert and Roberta Wohlstetter on national security and their contribution to United States strategic thought in the 1950s.

Looking to the 1990s, the authors discuss: a plan for future military competition, trends in Asia, the future of nuclear strategy, and changes in the third world; and they assess the advancing proliferation of weapons among small and medium Powers.

A biographical sketch of Albert and Roberta Wohlstetter and individual bibliographies of their works are also included.

Medalia, Jonathan, Paul Zinsmeister and Robert Civiak, eds. *Nuclear Weapons and Security: the Effects of Alternative Test Ban Treaties*. Boulder, Colorado, Westview Press, 1991. 275 p.

The book, prepared by the Staff of the Congressional Research Service at the request of the Committee on Foreign Affairs of the United States House of Representatives, provides a concise history of the test-ban debate from 1945 to 1987 and examines four treaties limiting nuclear explosions: the partial test-ban Treaty, the nuclear-non-proliferation Treaty, the peaceful nuclear explosions Treaty and the threshold test-ban Treaty. The authors, academic and professional experts, with the assistance of government officials and other experts in the field, examine various aspects of alternative test-ban treaties on the future of nuclear weapons. They discuss the consequences of these treaties on the development of new nuclear weapons; the maintenance of confidence in current stockpiles; and the effects of nuclear explosions on military equipment.

The study concludes with an examination of the views of non-super-Power nuclear-weapon States and the NATO allies on these treaties and their implications for nuclear non-proliferation.

Müller, Joachim W. *The Reform of the United Nations*. New York, Oceana Publications Ltd., 1991. 2 vols.

Written by Joachim W. Müller, programme planning and budget officer of the United Nations Office in Vienna, this two-volume publication describes the reform effort launched in 1985 in response to the United Nations financial crisis and concluded at the end of 1990. Focusing on the work of the "Group of 18", the Group of High-Level Intergovernmental Experts to Review the Efficiency of the Administrative and Financial Functioning of the United Nations, the book seeks to assist readers in understanding the actual process of "reform making" at the United Nations. Volume I provides a detailed account of the reform process and reviews past efforts. Volume II brings together 11 resolutions and over 40 documents associated with the reform process. The book also includes an assessment of the efforts made by the General Assembly to implement the reform proposals.

*Naval Arms Control: A Strategic Assessment*. By Barry M. Blechman and others. New York, St. Martin's Press in association with The Henry L. Stimson Center, 1991. 268 p.

*Naval Arms Control* explores, for the first time, factors that make naval arms control such an arduous task, namely, maritime accidents, the effects of limits on attack submarines, and the possibilities for arms control at sea. Written in association with the Henry L. Stimson Center, the book is the result of a year-long effort by the Chairman of the Center, Barry M. Blechman, to investigate American interests that might be affected by naval arms control and to identify and evaluate those types of agreements and unilateral measures involving maritime forces that might enhance United States security.

The authors note that, historically, the United States has refused to consider any naval arms control measures, citing its need for maximum freedom for maritime operations as it relates to both its economic and its security relationships. In this vein, they cite naval arms control measures which could benefit the United States, including: unilateral restraints, informal discussions in bilateral and multilateral forms, and formal negotiations.

*New Outlook: Middle East Magazine*. September/October 1991, vol. 34, No. 5, 50 p.

This issue is devoted to the question of a nuclear arms race in the Middle East. It contains eight short pieces on regional actors' nuclear capabilities, Israeli policy and public opinion, and prospects for achieving a nuclear-weapon-free zone. Contributors include Nancy Blabey, Larry G. Brown, Avner Cohen, Marvin Miller, Yoram Nimrod, Hillel Schenker, Leonard S. Spector and Richard Wilson.

Nolan, Janne E. *Trappings of Power: Ballistic Missiles in the Third World*. Washington, D.C., The Brookings Institution, 1991. 209 p.

*Trappings of Power* offers a historical perspective of the evolution of the international military technology market and assesses its implications for United States policy, with particular emphasis on the diffusion of missile technology to volatile regions of the world—including the Persian Gulf—and the complex challenges this poses to global security and American foreign policy.

The book also surveys third world ballistic missile programmes and their military significance in third world combat scenarios, which, though limited, could alter the global military calculus dramatically, as was evidenced by the recent war in the Persian Gulf. It also examines the strengths and weaknesses of the international decision-making process, which promotes or restrains the export of military technology to the third world.

Payne, Keith B. *Missile Defense in the 21st Century: Protection Against Limited Threats, Including Lessons from the Gulf War*. Boulder, Colorado, Westview Press for the National Institute for Public Policy, 1991. 163 p.

In his study *Missile Defense in the 21st Century*, Keith B. Payne examines the effects of missile proliferation on missile defence in the early part of the twenty-first century and provides a look at varying rationales for missile defence; a description of Global Protection against Limited Strikes (GPALS) and alternatives thereto; an examination of the impact of the war in the Persian Gulf on missile defence; and a Soviet view of the implications of missile proliferation and missile defence on the future of the ABM Treaty and GPALS. He advances the theory that future United States security considerations will have to include a wider array of political and military concerns and that this, in turn, will trigger the need to re-evaluate long-held positions regarding its security and foreign policy.

Underlining the importance of missile defence in the emerging security environment, Payne concludes that the lessons of the war in the Gulf remind us that the traditional case against missile defence belongs to the past—the cold-war era—and not to the future.

Poole, J. B., ed. *Verification Report 1991: Yearbook on Arms Control and Environmental Agreements*. New York, The APEX Press in cooperation with the Verification Technology Information Centre (VERTIC), London, 1991. 276 p.

*Verification Report 1991* is a compilation of informed analyses by leading experts in the field of arms control and disarmament. It focuses, *inter alia*, on the latest advances, the stumbling-blocks, and the most promising ways of advancing, monitoring and verifying arms control and environmental agreements. The book presents a survey—to be revised and updated periodically—of the technologies for monitoring and verifying such agreements.

The main sections of the book deal with treaties and negotiations; technologies and techniques; and concerns for the future. A final section presents reference information on documentation, a bibliography and a list of abbreviations and acronyms relating to verification.

Sichol, Marcia W. *The Making of a Nuclear Peace: The Task of Today's Just War Theorists*. Washington, D.C., Georgetown University Press, 1990. 219 p.

The author, Sister Marcia Sichol, S.H.C.J., analyses contemporary American "just war" theory and provides a benchmark for evaluating the work of three traditional moralists of our time—Paul Ramsey (Protestant), William O'Brien (Catholic) and Michael Walzer (Jewish)—and the contributions of a new generation of scholars, among them James Turner Johnson and Gregory Kavka.

The book deals also with general questions of war and peace in the nuclear age; the military and political uses of nuclear weapons; and nuclear war, nuclear peace and the bondedness of peoples. An 11-page bibliography, including church statements and related dissertations, is annexed to the book.

Sur, Serge, ed. *Verification of Current Disarmament and Arms Limitation Agreements: Ways, Means and Practices.* Aldershot, United Kingdom, Dartmouth for the United Nations Institute for Disarmament Research, 1991. 396 p.

One in a series of research projects undertaken by UNIDIR with the assistance of a group of eminent scholars, this study provides a detailed analysis of a number of agreements and instruments concluded since 1925. Part I comments generally on verification and describes various treaties and instruments covered in the study. Part II consists of a series of monographs prepared by members of the Group of Experts set up by UNIDIR, in which they describe the provisions of individual verification agreements and instruments and their implementation. Each chapter includes bibliographic citations, a table listing the main treaty provisions, monitoring and verification methods, and relevant treaty articles. Part III gives a summary of the meetings of the UNIDIR Group of Experts.

Wolfson, Richard. *Nuclear Choices: A Citizen's Guide to Nuclear Technology.* Cambridge, Massachusetts, The MIT Press, 1991. 467 p.

Written for the layperson, *Nuclear Choices* provides an introduction to the basics of nuclear technology—nuclear energy and radiation, nuclear power and nuclear weapons—stressing the connection between them. Richly illustrated, each chapter concludes with a summary of the main ideas, a key-word glossary and a short bibliography.

# Further Publications

*Disarmament* is unable to publish summaries of all books and articles sent to the Editor. The following is a list of items received recently.

*Asian Security 1991-92*. London, Brassey's (UK) for the Research Institute for Peace and Security, 1991. 247 p.

Ball, Desmond. *Air Power, the Defence of Australia and Regional Security*. Canberra, Australia, Strategic and Defence Studies Centre, Australian National University, 1991. (Working Paper No. 229)

Ball, Desmond, and Commodore Sam Bateman. *An Australian Perspective on Maritime CSBMs in the Asia-Pacific Region*. Canberra, Australia, Strategic and Defence Studies, Australian National University, 1991. 30 p. (Working Paper No. 234)

Ball, Desmond, and Helen Wilson, eds. *New Technology: Implications for Regional and Australian Security*. Canberra, Australia, Strategic and Defence Studies Centre, Australian National University, 1991. 247 p. (Canberra Papers on Strategy and Defence No. 76)

Boulden, Jane, and David Cos. *The Guide to Canadian Policies on Arms Control, Disarmament, Defence and Conflict Resolution 1991*. Ottawa, Canadian Institute for International Peace and Security, 1991. 331 p. (text in both English and French)

Brzoska, Michael. *"Neue" Rüstungsexportpolitik?: Bestandsaufnahme und Handlungsvorschläge*. Bonn, Institut für Politische Wissenschaft, 1991. 16 p. (Arbeitspapiere 51)

Canada, Government of. *Novel Toxins and Bioregulators: the Emerging Scientific and Technological Issues Relating to Verification and the Biological and Toxin Weapons Convention*. 1991. 56 p.

Canada, Government of. *Transparency Mechanisms for the Canadian Chemical and Biological Defence Program*. 1991. 11 p.

Chestnutt, Heather, and Michael Slack, eds. *Verifying Conventional Force Reductions in Europe: CFE I and Beyond*. Toronto, Canada, Centre for International and Strategic Studies of York University, 1990. 218 p.

Conetta, Carl, Charles Knight and Lutz Unterseher. *Toward Defensive Restructuring in the Middle East*. Cambridge, Massachusetts, Commonwealth Institute, February 1991. 39 p. (Project on Defense Alternatives Research Monograph)

Congressional Budget Office. *The START Treaty and Beyond*. Washington, D.C., Congress of the United States, October 1991. 175 p.

Daniel, Donald C. F. *Beyond the 600-Ship Navy*. London, Brassey's for the International Institute for Strategic Studies, 1991. 55 p. (Adelphi Papers 261)

Doran, Charles F., and Stephen W. Buck, eds. *The Gulf, Energy and Global Security: Political and Economic Issues*. Boulder, Colorado, Lynne Rienner Publishers, 1991. 234 p.

Dunay, Pál. *The CFE Treaty: History, Achievements and Shortcomings*. Frankfurt am Main, Germany, Peace Research Institute Frankfurt, 1991. 143 p. (PRIF Reports No. 24)

*Executive Summary of European Security: the New Agenda*. London, Saferworld Foundation, 1990. 16 p.

Feste, Karen, ed. *Regional Security Issues: IPRA Defense and Disarmament Study Group Paper 4*. Mosbach, Germany, Arbeitsgruppe Friedensforschung und Europäische Sicherheitspolitik, 1991. 84 p. (AFES-Press Report No. 44)

Finland, Ministry for Foreign Affairs. *International Inter-Laboratory Comparison (Round-Robin) Test for the Verification of Chemical Disarmament: F.2—Testing of Procedures on Simulated Industry Samples*. 1991. 381 p.

Finland, Ministry for Foreign Affairs. *Training Program in Analytical Methods and Instrumentation for the Verification of Chemical Disarmament: G.1.—Basic Course*. 1991. 79 p.

Gelman, Harry. *Gorbachev and the Future of the Soviet Military Institution*. London, Brassey's for the International Institute for Strategic Studies, 1991. 67 p. (Adelphi Papers 258)

Glaser, Charles L. *Analyzing Strategic Nuclear Policy*. Princeton, New Jersey, Princeton University Press, 1990. 378 p.

Goin, Peter. *Nuclear Landscapes*. Baltimore, Maryland, The Johns Hopkins University Press, 1991. 149 p.

Gordon, Sandy. *India's Security Policy: Desire and Necessity in a Changing World*. Canberra, Australia, Strategic and Defence Studies Centre, Australian National University, 1991. 24 p. (Working Paper No. 236)

Harkin, Tom, with C. E. Thomas. *Five Minutes to Midnight; Why the Nuclear Threat is Growing Faster Than Ever*. New York, Birch Lane Press Book published by Carol Publishing Group, 1990. 383 p.

Hay, Robin. *Civilian Aspects of Peacekeeping: A Summary of Workshop Proceedings, Ottawa, 9-10 July 1991*. Ottawa, Canadian Institute for International Peace and Security, October 1991. 38 p. (Working Paper No. 36)

Hooks, Gregory. *Forging the Military-Industrial Complex: World War II's Battle of the Potomac*. Urbana, Illinois, University of Illinois Press, 1991. 303 p.

Horner, David, ed. *Reshaping the Australian Army: Challenges for the 1990s*. Canberra, Australia, Strategic and Defence Studies Centre, Australian National University, 1991. 282 p. (Canberra Papers on Strategy and Defence No. 77)

Hughes, Peter C. *Satellites Harming Other Satellites*. Arms Control and Disarmament Division, External Affairs and International Trade, Ottawa, Canada, 1991. 51 p. (Arms Control Verification Occasional Paper No. 7)

Jordan, Robert S., ed. *Europe and the Superpowers; Essays on European International Politics*. London, Pinter Publishers, 1991. 276 p.

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Lebovic, James H. *Deadly Dilemmas; Deterrence in U.S. Nuclear Strategy*. New York, Columbia University Press, 1990. 252 p.

Lee, R. G. *Defence Terminology: An A-Z of Military Abbreviations, Acronyms and Special-Purpose Words*. London, Brassey's (UK), 1991. 225 p.

Lenssen, Nicholas. *Nuclear Waste: The Problem that Won't Go Away*. Washington, D.C., Worldwatch Institute, December 1991. 62 p. (Worldwatch Paper 106)

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Mack, Andrew. *Reassurance Versus Deterrence Strategies for the Asia/Pacific Region*. Canberra, Australia, Peace Research Centre, Australian National University, 1991. 35 p. (Working Paper No. 103)

Moller, Bjorn, ed. *Non-Offensive Defense in Europe: IPRA Defense and Disarmament Study Group Paper* 2. Mosbach, Germany, Arbeitsgruppe Friedensforschung und Europaïsche Sicherheitspolitik, 1991. 89 p. (AFES-Press Report No. 42)

Pascall, Glenn R., and Robert D. Lamson. *Beyond Guns and Butter: Recapturing America's Momentum After a Military Decade*. Washington, D.C., Brassey's (US), Inc., 1991. 144 p.

*Proceedings of the Fortieth Pugwash Conference on Science and World Affairs*. Egham, United Kingdom, 15-20 September 1990. Pugwash Conference on Science and World Affairs, 1991. 692 p.

*Rapporto di Ricerca su Disarmo, Sviluppo e Debito*. Rome, Italy, Centro Militare di Studi Strategici, 1990. 212 p.

*Rapporto di Ricerca su Nuove Concezioni del Modello Difensivo Italiano*. Rome, Italy, Centro Militare di Studi Strategici, 1990. 222 p.

Remacle, Eric, and Jean-Pascal Zanders, eds. *La prolifération des armes chimiques: Actes du Colloque du 16 mars 1990*. Brussels, Groupe de Recherche et d'Information sur la Paix, mai-juin-juillet 1990. 152 p. (Dossier "notes et documents", Nos. 145-146-147)

Rioux, Jean-François. *Canadian Controls on the Export of Arms and Strategic Goods*. Ottawa, Canadian Institute for International Peace and Security, 1991. 8 p. (Background Paper No. 37) (text in both English and French)

*The Singapore Symposium: The Changing Role of the United Nations in Conflict Resolution and Peace-Keeping, 13-15 March 1991*. New York, United Nations, September 1991. 85 p. (DPI/1141)

Skogan, John, and Arne Brundtland, eds. *Soviet Sea Power in Northern Waters*. London, Pinter Publishers in association with John Spiers, 1990. 198 p.

Ullman, Richard H. *Securing Europe*. Princeton, New Jersey, Princeton University Press for the Twentieth Century Fund, 1991. 183 p.

Weissgerber, Marc. *Der Abzug amerikanischer Truppen aus Rheinland-Pfalz: Probleme einer regionalen Konversion*. Mosbach, Germany, Arbeitsgruppe Friedensforschung und Europäische Sicherheitspolitik, 1991. (AFES-Press Report No. 6)

Willett, Susan. *Controlling the Arms Trade: Supply and Demand Dynamics*. London, The Council for Arms Control, November 1991. 41 p. (Faraday Discussion Paper No. 18)

Woodhouse, Tom, ed. *Peacemaking in a Troubled World*. New York, Berg, 1991. 368 p.

Wright, John W., ed. *The Universal Almanac 1992*. Kansas City, Missouri, Andrews and McMeel, 1991. 664 p.

# Other Recent United Nations Publications on Disarmament

Office for Disarmament Affairs

**Books**

*Comprehensive Study on Nuclear Weapons*
(Sales No. E.91.IX.10)
*Towards a Nuclear-Weapon-Free Zone in the Middle East*
(Sales No. E.91.IX.3)
*Verification and the United Nations: The Role of the Organization in Verification of Multilateral Arms Limitation and Disarmament Agreements*
(Sales No. E.91.IX.9)

**Study***

South Africa's Nuclear-Tipped Ballistic Missile Capability
(Sales No. E.91.IX.15), forthcoming

**Topical Papers**

Number 7: Confidence- and Security-building Measures: From Europe to Other Regions (Sales No. E.91.IX.17)
Number 8: Challenges to Multilateral Disarmament in the Post-Cold-War and Post-Gulf-War Period
(Sales No. E.91.IX.18)

**Disarmament Facts***

Number 78: *The United Nations and Disarmament since 1945*

**Disarmament Newsletter****

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* Also available in Arabic, Chinese, French, Russian and Spanish.

** Also available in French, Russian and Spanish.

## Research Reports

*The United Nations, Disarmament and Security: Evolution and Prospects*, by Jayantha Dhanapala (ed.), 1991, 156 p., United Nations publication, Sales No. GV.E.91.0.13

*Prevention of an Arms Race in Outer Space: A Guide to the Discussions in the Conference on Disarmament*, by Péricles Gasparini Alves, 1991, 221 p. (Sales No. GV.E.91.0.17)

*Nuclear Issues on the Agenda of the Conference on Disarmament*, by Thomas Bernauer, 1991, 108 p. (Sales No. GV.E.91.0.16)

*Verification in Disarmament: Trends and Developments*, by Serge Sur (ed.), published for UNIDIR by Dartmouth (London), forthcoming

*National Security Concepts of Argentina*, by Julio C. Carasales, United Nations publication, forthcoming

*National Security Concepts of Sri Lanka*, by Vernon L. B. Mendis, United Nations publication, forthcoming

## Research Papers

No.10—*Disarmament, Environment, and Development and Their Relevance to the Least Developed Countries*, by Arthur H. Westing, October 1991, 108 p. (Sales No. GV.E.91.0.19)

No. 11—*The Implications of IAEA Inspections under Security Council Resolution 687*, by Eric Chauvistré, United Nations publication

No. 12—*Les mesures de confiance de la CSCE: documents et commentaires, d'Helsinki (1975) à Vienne (1990)*, publication des Nations Unies

## UNIDIR Newsletter

Vol. 4, No. 4, December/décembre 1991, *Bilateral (US-USSR) Agreements and Negotiations/Accords et négociations bilatéraux (EU-URSS)*

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Alexei G. Arbatov

Limited Defences under a Modified ABM Treaty
William S. Cohen

**Arms Exports Controls: Developments in Domestic Legislation**

Italian Legislation on the Export of Armaments
Cecilia Corsi

Strategic Exports Control and Disarmament in France
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## Documentation Relating to Disarmament

Selected Security Council Resolutions of the Special Commission on Iraq
Security Council Resolution 707 (1991), 15 August 1991
Security Council Resolution 715 (1991), 11 October 1991

Joint Declaration on the Complete Prohibition of Chemical and Biological Weapons: Mendoza Accord
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United States-Soviet Joint Statement on Afghanistan
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Commentary on the United States-Soviet Joint Statement on Afghanistan
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Developments in the El Salvador Peace Process
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Moscow, 5 October 1991

Responses to the United States and Soviet Initiatives
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Closing Communiqué of the Meeting of the Five on Arms Transfers and Non-Proliferation
London, 17-18 October 1991

Statement by the Verkhovna Rada of Ukraine on the Non-Nuclear Status of Ukraine
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**Hi-Tech Weapons and Proliferation Concerns**

Proliferation of Weapons Systems and Disarmament Issues with Particular Reference to Prohibition of Biological, Chemical and Other Weapons of Mass Destruction
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Trends in the Proliferation of Sophisticated Weapons and Missile Technology and Their Implications for International and Regional Security
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Security Systems for the Prevention of War
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**Confidence- and Security-building Measures: Their Applicability outside of European Contexts**

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Mohamed Jawhar

The Relevance of Confidence- and Security-building Measures for Africa
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**The Nature of Confidence-building in the Latin American Environment**

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**Destruction of Weapons Systems under Multilateral Arms Control Agreements**

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Homero L. Hernández Sánchez

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**Documentation Relating to Disarmament**

Resolution 271 (XII), adopted by the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean at its twelfth regular session, entitled "Foz de Iguazú Declaration on the joint nuclear policy of Argentina and Brazil", Mexico City, 9 May 1991

Agreement between the Government of Hungary and the Government of Romania on the Establishment of an Open Skies Regime, Bucharest, 11 May 1991

Excerpt on Nuclear Disarmament and Non-Proliferation from the French Arms Control and Disarmament Plan, 3 June 1991

Final Document of the Seminar for High-Level Military and Civilian Officials, Yaoundé, 21 June 1991

Statement by President F. W. de Klerk on South African Accession to the NPT, Pretoria, 27 June 1991

European Council Declaration on Non-Proliferation and Arms Exports, 29 June 1991

Communiqué of the Political Consultative Committee of the Warsaw Treaty Member States and Protocol Signed, Prague, 1 July 1991

Communiqué from Paris Meeting of Five on Arms Transfers and Non-Proliferation, Paris, 8-9 July 1991

Economic Summit Declaration on Conventional Arms Transfers and NBC Non-Proliferation, London, 15-17 July 1991

Democratic People's Republic of Korea and the International Atomic Energy Agency Secretariat Complete Safeguards Agreement Text, 16 July 1991

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Selected papers presented at the United Nations Regional Meeting on Confidence-building Measures in the Asia-Pacific Region, held at Kathmandu, Nepal, 24-26 January 1991

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Kusuma Snitwongse

Confidence-building Measures in the Asia-Pacific Region
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**The Conventional Forces in Europe Treaty (*continued*)**

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Victor P. Starodubov

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